NATURE MAGAZINE
VOLUME 25 · MAY · 1935 · NUMBER 5

"CARBON COKE"

The story of a personable crow

By JULIE CLOSSON KENLY

Illustrated by Jex

"CARBON COKE" was a crow; "carbon" prefacing the "coke" because to the eyes of his loving master Coke's plumage was a vitreous, glossy black. To the rest of the world, however, Carbon Coke was one of the ugliest of crows. In fact, he possessed not one redeeming feature. He was bereft of tail, and his wings had been so effectively clipped by the person who first owned him that the feathers apparently had lost all urge to grow again. His body was clothed in a disreputable and ragged garment of sunburned hue—a neglected black, for Coke had no pride whatever in his personal appearance. The only part of him that was not actively unpleasant to look upon was, when he opened his bill, the inside of his mouth. This was a lovely rose-red. To such straits was one put to discover beauty in Carbon Coke!

But, although Coke was not much to boast of from the outside, from the deeper regions of his mind, he was unique among our pets; for he was a crow capable of an inferiority complex and with a spirit so sensitive to disapproval that, when he knew he was disliked, he suffered. One hardly expects this in a mere crow, so it becomes worth writing about.

Because of his clipped wings Coke could not fly at all. A stumpy sort of flutter—more hopping than flying—was the best he could do in the way of vertical progress. Yet he had evolved a sign language with these crippled wings that was sufficient for his self-expression. With them he could dramatize states of pleasure, protest, excitement, anger, hunger, curiosity, resentment; and all by holding the poor stumps out from his sides at different angles and vibrating them at different emotional speeds. What untoward accident deprived him of his tail we never knew. It was one of the dark incidents of his career that had, perhaps, resulted in his morbid sensitivity.

Coke made the summer journey from New Jersey to New Hampshire in a large screened box strapped on the rumble seat of his master's car. He stood the trip with more patience than any of the other birds who had made the same journey; and when he was finally unloaded at his foster grandmother's back door, he squawked a loud greeting quite as a carefree crow should. Indeed, his pleasure was so pronounced that it was suggested that he was giving three crow cheers! But it was a short-lived jubilation. His hour had struck. So had his grandmother.

This grandmother had not been apprized of Coke's coming. There were grave doubts of her approval. So the car, with its great crate full of crow, wheeled into her place as a dreadful surprise. Coke had not been free three minutes before she could visualize what her house would look like when he had been there, let us say, for half an hour. To put the matter with true Victorian delicacy, Coke was untidy. He was not a housebroken crow. So it was that then and there an ultimatum was delivered in panic protest, and, though spoken in English and not in Crow, its import did not escape the invisible ears of Carbon Coke. He seemed to understand at once his sentence. On pain of death he was not to be allowed to enter the house—even in rainy weather. He was not to perch on the backs, rungs, or cushions of porch furniture. He was not to go near the hammock. In short, he was not even to put claw on the front porch itself. His abiding place was to be restricted to the back stoop and that part of the back yard which was well out of sight of the front. He could sleep in the garage and spend rainy days under its inhospitable roof, but never poke his misbegotten head into the family circle! All this may sound inhuman, but it was the case of a turned worm. There are no greater martyrs to science than the mothers of naturalists. For them should be struck off a Congressional medal, as all heroism is not of the showy kind that merely saves lives. There is a far less appreciated variety that endures life cheek by jowl with wild crows, wild jays, wild squirrels, wild ants, tame skunks and snakes.

Human behavior has been carefully charted and is considered a reliable expression of the emotions engendering it, so why object to using the same method upon the emotional reactions of a crow? Certain it is that a few short hours turned Carbon Coke into a bird with a real grievance, a bird whose little crow heart had sustained a deep wound. From the moment of his dramatic ostracism on the day of his arrival Coke did nothing but talk about it. When anyone came near him, he at once began

HE WOULD TEETER ON HIS WATER DISH UNTIL HE HAD UPSET ALL THE WATER IN IT AND THEN WOULD MOVE IT AWAY AND HUNT FOR WORMS IN THE DAMP CIRCLE OF EARTH

to grumble and complain. He buttonholed all passers, looking one straight in the face—no quizzical, half-humorous cocking of the head as is the way of birds—and with hard, angry black eyes began at once to pour forth sounds which seemed to be salty with crow bad language and snapping with crow curses.

And now comes the even more extraordinary part of Coke's behavior; so extraordinary, in fact, as to force one into believing that, in some occult manner common to crows and uncommon to men, Coke knew he wasn't wanted. He also apparently understood all the localities about the place on which were posted, for him, "NO TRESPASSING"; and understood this without having to be trained, taught or expostulated with. The grounds about the house were not fenced off. Nothing prevented Coke from making voyages of discovery and finding the front porch which had been a favorite roosting place for other birds with clipped wings. Yet not once in all the weeks he was there did Coke leave the back of the grounds where he had been told he must stay. He made a small beat for himself of not more than a hundred yards, and at any time of day one could find him somewhere along it, walking solemnly up and down, or perched on a rock. As another pet crow had explored every part of the property before he had been here a day, and made a selection of the front porch as his own, one cannot say that Coke's lack of interest was merely a part of a clipped crow's psychology. No, it was rather the outcome of his own conservative personality; unless it was, indeed, a case of being too proud or too hurt to intrude where he felt he was not wanted!

"Sambo", the first crow, was a merry, alert creature, always in search of new sensations and eager to explore. This was, in fact, the cause of his death, for he tippled in the turpentine cup fastened to a palette of oil paints, and died of his taste for such hard liquor. That is, we supposed he died, as he never returned for another drink. But there was nothing experimental, nothing affectionate, nothing playful about Carbon Coke. Most pets are fond of the children of a family, seeming to recognize in them a pure spirit of play not unlike their own. Coke was different. He found no more pleasure in the companionship of children than he did in that of the rest of us. He had even been known to chase the youngest of them, snapping his beak and speaking anger with both his voice and his expressive wings.

Sambo was a very intelligent crow. Coke was not, as far as his grandmother's personal observation went, except in the matter of adjusting himself to her own inhospitality. In all the weeks he spent with us he did only one thing which gave evidence of the use of that reasoning power which animals so often show, despite denials that reason plays any part in their instinctive minds. Coke felt acutely, but he did not often use his head. Yet on the night of his first arrival something happened which seemed to show that he could draw intelligent conclusions from what he observed. He had spent this first day perched sulkily on the wall of the back stoop, scolding at anyone who came near him and demanding to be fed. But when night fell and his master went out to find him and put him in his cage, Coke was gone. Immediate suggestions of foxes, minks and wild cats were adduced in explanation of his absence; he, who could have no idea of the danger of the woods for careless folk, would fall an easy prey—and one at least of the searchers, that night, had a troubled conscience! In vain we called and called his name; nor did we ever get an answer, for Coke was finally discovered sound asleep in his cage. He had put himself to bed!

The garage—which had been grudgingly alloted to him for sleeping quarters—was some distance from the house, and its doors opened *away* from the porch on which Coke sat. To his eyes it must have appeared as just another building similar to the one before him. Yet he found his way over there and discovered his cage, placed on a shelf far above the ground, reaching it by a jump that would have seemed impossible for him to make. How did he know that this cage had not vanished in the same mysterious way as had the whole state of New Jersey? Was it a case of reasoning that his master's car was kept in

a garage and that a garage was the smaller of two houses? Or was it just a case of a home smell sniffed from a distance?

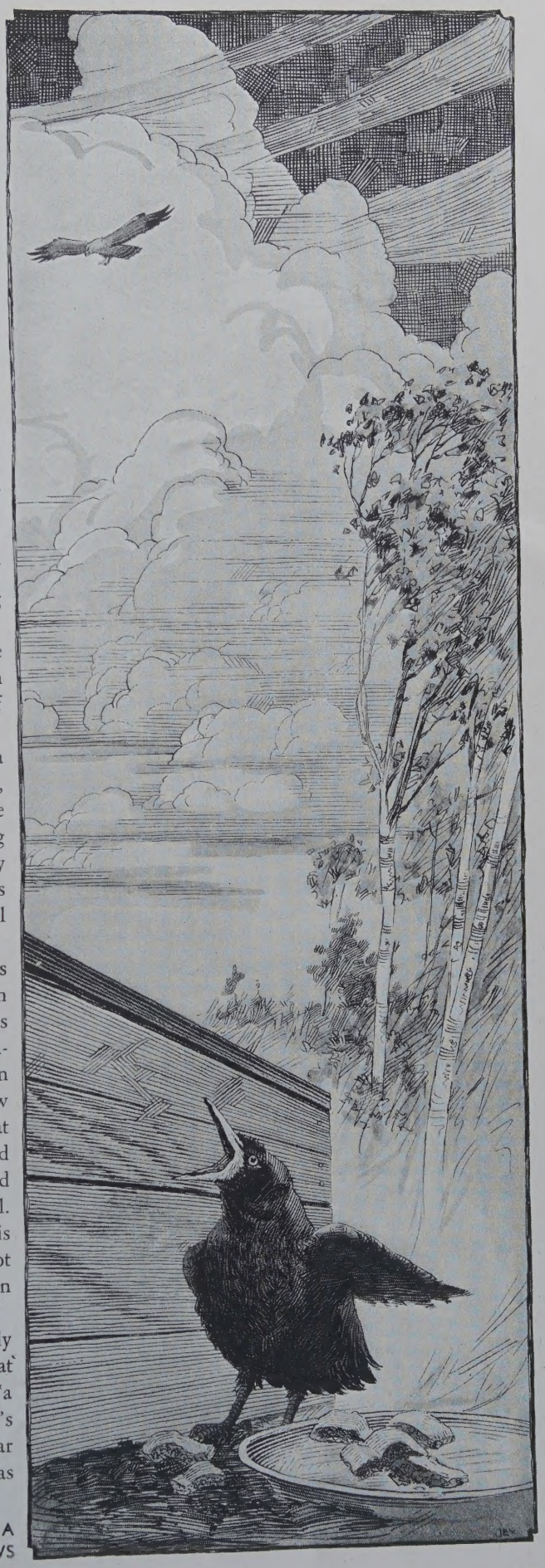
This act of putting himself to bed he kept up all summer. Never was a pet less trouble or responsibility. His final desertion of the back stoop as a roosting place was, however, something of an embarrassment to his grandmother. The family had gone mountain-climbing, leaving Coke—and a thousand directions concerning him—to her care. She fed him to repletion; provided him with a large pan of fresh water in the hope it would suggest a bath; and only plaintively discussed with him certain matters that had to do with the coco door mat. Yet that day resulted in another inexplicable phase of Coke's behavior; for never again would he perch on the back stoop wall! So pointedly, in fact, did he avoid the place as to rouse dark suspicions that, in his master's absence, he had been swept off the porch with a broom or otherwise manhandled. Indeed, one not knowing the facts could only believe that Coke had been terrorized. The two alternatives, namely, that he felt conscience stricken in the matter of the mat, or that he deliberately revenged himself on his grandmother by putting her in a compromising position, were not considered tenable by the family.

The spot Coke now chose for a roosting place was the woodpile, and his homely little black figure could be seen there at all times of day, like a disreputable edition of Poe's raven: hunched and gloomy.

This woodpile overlooked the valley, commanding a wonderful panorama of blue mountains and silver lakes, but Coke invariably sat with his back to the view. One wondered if he could not bear the sight of that shining gulf across which he could not fly, or whether he merely wanted to be rude. Was it Coke's way of snubbing his grandmother's view—of showing her that she and all her works were beneath the contempt of a crow?

In painting the portrait of Coke in such drab colors one does not, however, get the entire bird, for, though he was sulky and moody and self-pitying, his life was motivated—and let us hope cheered—by one flaming interest—food. Coke was not only a raging glutton but an epicure as well. It is safe to say that he is the only crow in the world who lives on tenderloin steak, whole-wheat bread, and cream. Not only this, but they must be warmed to a certain temperature before they are fed to him. Food taken directly from the refrigerator gives Coke a chill. He will shake pitifully and to his very pin-feathers if his dinner is not properly heated. Cooked meat Coke did not like; he took it into his bill, meditated a moment, then spat it out.

When Coke was first presented to his master the only clue given as to his tastes in food was the remark that he could "make way with a mouse at one gulp"; so "a mouse" was taken as the standard measurement for Coke's meals, and, as it was argued that a mouse must be far tenderer than a cow, the only part of the latter that was



A HAWK WINGING OVERHEAD WOULD SEND COKE INTO A FRENZY, AND HE DISTINCTLY DISLIKED OTHER CROWS

deemed fit for Coke to eat was the tenderloin. Twice a day a "mouse-sized" ration of tenderloin was added to what ailing bits of protein he could catch as they hopped out of his way through the grass—and they would have to be ailing for clumsy old Coke to overtake them. He was no match for the sprightliness of healthy grasshoppers or crickets, nor could he scratch for tidbits like the poor hen he resembled.

These "mouse-sized" rations were the cause of much family discussion. The day Coke arrived his grandmother committed the error of ordering ten cents' worth of "crow meat" for him. On opening the package its contents were found to be tough and of a debatable vintage—the butcher's estimate of a crow's taste, no doubt. The butcher was held blameless. It was Coke's grandmother who was pronounced very tactless in prefixing "crow" to the meat order. In the future Coke's meat must merely be designated as "ten cents' worth of your best tenderloin". It must be ordered fresh every day and not explained. This at once divided the family into two camps; those who were too proud to go into a butcher's shop and ask for ten cents' worth of his best tenderloin; watch it cut off, watch it wrapped up, pay a dime and depart leaving the matter unexplained to the butcher; and those whose spirits were independent enough to undergo such an ordeal as this.

Gluttony is a sordid thing even for a crow; yet in the case of Carbon Coke it assumed a different aspect, for it seemed that out of that sparse and depleted existence he had, like a true philosopher, mounted the one jewel of passion left him, the gastronomic jewel, that can, even in creatures more advanced in the scale than Coke, be made the consolation prize of sixty. Many a one has followed Carbon Coke's example and translated his heart into terms of his stomach.

It is an interesting thing that none of the wild creatures adopted by Coke's family have shown any instinctive fear of man. "Sambo" the first pet crow, "Jakey" the blue jay, "Grunts" the squirrel, all accepted human beings in general as if they, themselves, belonged to the human race. It must be that these instinctive channels of conduct, which we are told have carved out the minds of birds and animals, do not cut as deeply in as supposed; and that the panic fear of human beings which sends the wild creatures scuttling at the approach of man is a case of parent training and example, rather than any fear passed down by the sorrowful experiences of animals at the hands of man. While Coke, the wild crow, was not in the least afraid of human beings, he was, on the other hand, mortally afraid of—crows! He was not a noisy bird; his conversation was of a snarling, grumbling nature, carried on almost beneath his breath, and if he did suddenly emit a loud squawking, one could be sure he had spied either a crow or a hawk. He did not seem to distinguish between the two when it came to rating his enemies. Let a crow come into the yard, this summer, and his distress was pathetic. One day he spent hours behind some boxes in the garage because a flock of his passing brothers had settled in a tree near the house.

This fear of crows opens up a host of speculations, fanciful and otherwise, concerning the mentality of Coke and his apparent realization that he was an outraged thing. Sambo was chummy with other crows; Jakey was in his element boasting and strutting among the timid wild jays of his acquaintance, even inviting them to tea in his feed box; Grunts would have liked his kind if his kind had liked him, and he gave every evidence of mortification when the wild squirrels snubbed him. Was it then that poor little Coke felt self-conscious over the fact that he could not fly and that he had no tail? Did he realize that he resembled nothing so much as a ragged black chicken? Or was it a knowledge of the rude barbarity of crow manners; a feeling that they would torment him by jeers and peckings because he was what might be called "afflicted"? Or still again, was Coke a radical—a creature embittered by gnawing envy of all who *did* possess wings and a tail? Who can say! One only knows that he was a crow who did not feel strange in the company of men, but who did in the company of crows.

As the summer went on no one seemed to grow any fonder of Coke except his master—males must of necessity cling together in a house full of females. And it was truly a difficult thing to get up any sentiment towards the bird. He appeared to have none himself, and he grew daily more misanthropic. He did not like to be petted, and furiously resented being picked up. He would go anywhere he was driven or bribed, but he considered it a gross insult if he was carried. Both Sambo and Jakey loved to have their feathers stroked, but there was nothing Sybaritic about Coke. "Take your hands off me!" was what one felt were his reactions to endearment. Neither was he playful. A dig with his sharp bill in search of secreted cookies was all one might expect of him. Once, on retrieving a lollypop, he rushed off in great excitement to crack it open, first by hitting it with his bill against a log, later by battering it on a stone. But when he found it harbored neither snail, worm nor kernel, he at once lost interest in it. Like other pet birds Coke was intrigued by shoelaces. To untie one's shoes is a never-ending amusement for such birds. Once a member of the family, seated on the grass with her sewing, offered Coke a wisp of colored ravelings to play with. He scorned it, and turning his back walked off. But it was merely a piece of gaucherie, a sulky refusal to be beguiled that one sometimes finds in ill bred children, for later he was discovered with his claws tangled in the red threads, which he had picked out from the other colors. He was genuinely interested in money, and selected the copper coins, hurrying off to bury them. Large sums like dimes and nickels made no appeal to him.

To hide anything he valued was an instinct with Coke, and he was very fussy concerning the best spots for his caches; looking nervously about him as he scurried away with bits of surplus food in his mouth, apparently afraid we might dig them up and eat them when his back was turned. But on the whole there is little to record of Coke's mentality except the inexplicable fact of his refusal to go anywhere except those places (Continued on page 279)

PHOTOGRAPH FROM THE U. S. NAVY

THE BATTLESHIP "NEW MEXICO" SHIPS A SEA

Returning liners often report encountering "mountainous waves" but open sea storm waves are rarely as high as fifty feet from trough to crest. Ideas on this score are usually exaggerated

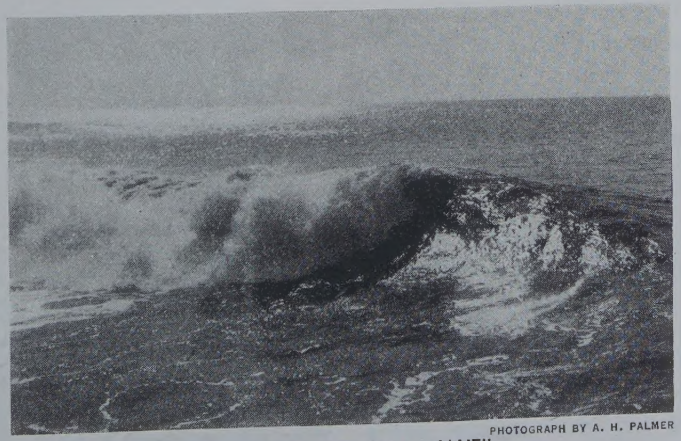
THE WAVES OF THE SEA

By CHARLES FITZHUGH TALMAN

IT HAS often been remarked that although the sailor has a great deal to do with *ropes*, he hardly ever calls them by that landlubberly name. Somewhat less attention has been given to the fact that the man who spends a "life on the ocean wave" rarely speaks of *waves*. There are exceptions to all rules. It is good nautical English to describe the billows formed by the movement of a ship through the water as "bow waves" and "stern waves," and there are a few other special cases in which the seasoned mariner admits that waves exist. Generally speaking, however, he refers to the ruffled surface of the ocean as either "sea" or "swell," according to circumstances, except when, in shallow water, it assumes the form that, in common with the landsman, he designates as "surf."

With this article I am glad to be able to publish a remarkable picture taken from an aeroplane of the United States Army flying over the Pacific. At regular intervals, stretching as far as the eye can reach, you may see a series of perfectly straight parallel ridges of water. In the spaces between them are innumerable detached waves, much less regular than the long ridges but tending to parallelism with one another. This picture indicates better than any verbal description the difference in aspect between sea and swell. The straight ridges are the latter; the intervening wave patterns the former.

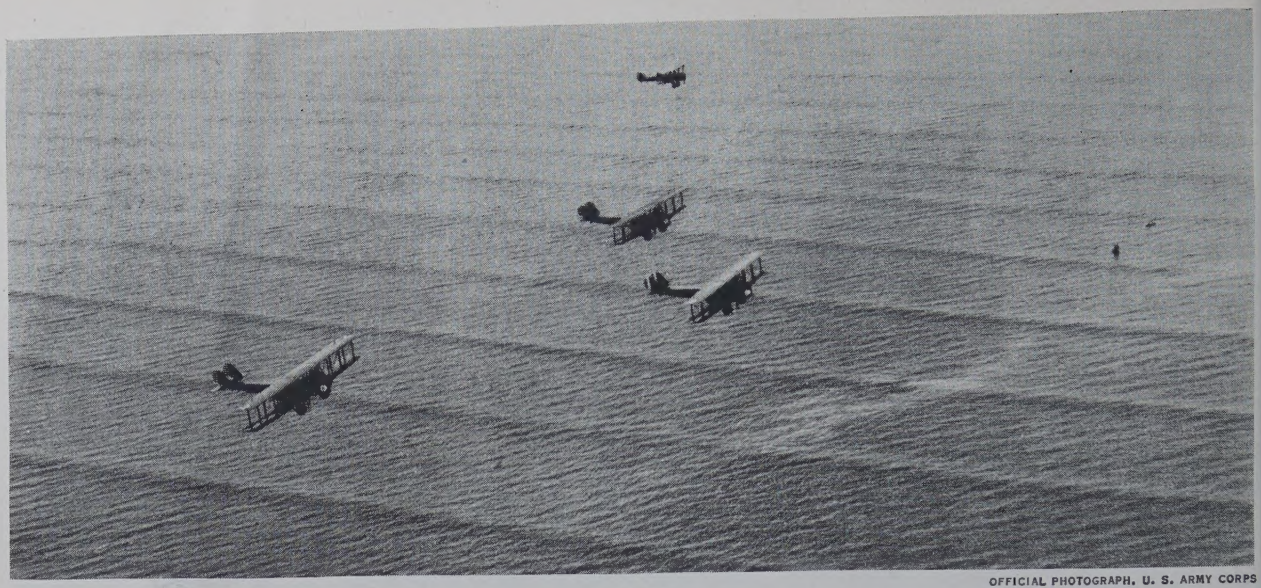
Sea consists of waves set up by winds blowing at the time and place of their occurrence. Swell consists of rhythmic undulations (not usually so regular as here depicted) caused either by winds on some other part of the ocean or by those that have prevailed at some previous time at the place where the swell is seen. Either may occur without the other, or both may be present at the same time, as shown in the picture. A ship encounters a heavy sea only when she is also exposed to high winds, but she may encounter a heavy swell in perfectly calm weather. The one exception to this statement is that the dangerous turmoil of confused waves found



PHOTOGRAPH BY A. H. PALMER

"THE CURL'D WHITE OF THE COMING WAVE"

Surf breaking on the coast of California



OFFICIAL PHOTOGRAPH, U. S. ARMY CORPS

ILLUSTRATING THE DISTINCTION BETWEEN "SEA" AND "SWELL"

This picture, taken on the Pacific off the coast of Panama, shows the contrast between a short, choppy "sea" and an exceptionally long and regular "swell"

at the calm centre of a tropical cyclone, where not a breath of wind may be blowing, is usually described as sea rather than swell; probably because the winds producing it are not far away.

Not only can there be sea and swell at the same time on a particular part of the ocean, but it often happens that two or more systems of waves of the latter kind are running at one time in different directions and at different speeds, leading to various combinations with one another and with waves due to the local wind. Thus two wave crests may unite to form a higher one, two troughs may merge into a deeper trough, and various partial combinations produce all gradations between these extremes. The shapes as well as the sizes of waves are modified by this combining process. The matter is further complicated by the fact that the waves of any one series are seldom of uniform size, since the winds that raise them usually fluctuate in strength.

The diversities of size thus produced have given rise to various traditions concerning the grouping of waves. There is an ancient belief that the tenth wave in a series—called by the Romans the *fluctus decumanus*—is bigger than the rest, but according to another almost equally familiar tradition every ninth wave is biggest. Modern sailors assert that big waves come in groups of three.

The oceanographer does not trust to his eye in seeking information about the intricate patterns of mounds and hollows assumed by the surface of the deep. He employs a camera; or, still better, two cameras set up far apart and arranged to take simultaneous photographs. In the latter case the resulting pair of pictures can be analyzed by an ingenious device called the "stereocomparator," yielding data from which can be drawn maps showing, by means of contour lines, the actual relief of all parts of the water surface within the area photographed. Many of these remarkable topographic charts of the ocean have been obtained by some of the recent German oceanographic expeditions.

Greatly exaggerated ideas have always prevailed concerning the heights attained by waves. On the open sea the storm waves described as "mountainous" are probably very rarely as high as fifty feet from trough to crest, except where occasionally two intersecting waves may send up a momentary peak of water as high as sixty feet. Another possible exception is the case of a so-called "solitary" wave, due to a submarine earthquake, which may perhaps tower to a greater height than any billow raised by the wind. Of course a wave breaking against an obstacle, such as a sea-wall or the hull of a ship, can throw water to a height much greater than is ever attained by an unbroken wave. Waves five hundred feet long (measured from crest to crest or from trough to trough) are not uncommon in storms, and there are a number of trustworthy records of lengths exceeding a thousand feet. Tales of mile-long billows on the Southern Ocean are not credited by the authorities.

The swell set up by a storm travels far and wide over the ocean and often gives the first notice of the storm's approach; especially in the tropics, where cyclones advance slowly, however swiftly the winds may blow around their centres. When swell enters shallow water its waves grow steeper and higher, and it may thus become terrific surf. Such surf, due to a faraway storm, can arrive at a coast in windless weather, or when the wind is blowing offshore.

It is an old story that swell heralds a coming storm, but only recently has it become possible, thanks to radio, to predict the appearance of swell along a coast from reports of storm movements on a distant part of the ocean. In the open roadsteads on the Atlantic coast of Morocco shipping once suffered severely from surf due to storms in the waters between Iceland and Ireland. Radio reports of these storms and of the occurrence of swell on the coasts of the Azores and Portugal now enable meteorologists to give ample warning to both ship and shore of the coming of dangerous surf on the Moroccan shores.

Character in Flowers

By FLORENCE K. TOMLINSON

Illustrations by the Author

SOME flowers attract us by their fragrance; others by their glorious color; others by their delicacy of hue and softness of petals; others by their character alone.

When I was a child, I used to play a game. I sat in the grass and imagined I was only two inches tall. Immediately what were weeds became giant trees. I looked up, climbed the stalks, sat on the leaves, gazed down the calyxes of flowers and chose some for gorgeous hats. In this way I became acquainted with many marvels of plant life; not just as a botanist but more as a designer.

Nature reveals to us, in each tiny plant, wonderful lessons in order, contrast, balance and harmony if we but take time to search or look around us. By training our eyes to see, we can appreciate Nature and beauty on every side. We can enjoy and understand art principles as exemplified in the things that grow, whether they are in our garden, the empty lot, along the beach, by the roadside, in an old marsh, or in woods beside the mountain trail.

Many people, uninitiated, pass these places daily, going through life without seeing half the beauty around them. How much better to be conscious of the graceful lines and lovely simple forms; to see beauty in the common growing things. One may find interest even in those plants usually called weeds.

When searching for character in flowers, new worlds of beauty will open to one's eyes. It is this simple contact with Nature that can develop a deeper appreciation of the laws of beauty.

Artists have always painted flowers, yet the pigments of their palettes can never quite reach the colors of Nature. It is more difficult, perhaps, to suggest texture or softness of petal, but the design is ever there to tempt us.

What are the laws of beauty that make up this character?

If we look at plants, we will find leaves growing opposite each other at regular intervals, rhythm by repetition; again leaves are alternately placed, rhythm in alternation. Both are with a growing movement or gradation toward a perfect sequence; this sequence or systematic growth generally terminating toward a bud, flower or

cluster of flowers, which provide a proper climax.

There is also a larger rhythm, the rhythm of line, form, tone and color repeated in the various stalks as each gracefully strives upward for its share of sunshine.

Balance may be thought of as of two kinds, symmetrical and occult. We may call it the repose of a plant or its equilibrium. A tree or flower growing alone in a field may stand erect and have almost a perfect like-sidedness or symmetrical balance. Others, in crowded areas and still trying to reach toward the sun, will maintain their balance in an informal way, that of occult balance.

Radiation is another term with which we should become familiar. A little flower illustrates this, its petals radiating from a center, or the plant as a whole may radiate from a central base. Some leaves radiate from a point on their branches. Study these points on your next walk.

Harmony and unity may be attributed to the garden or field as a whole, or to the plants individually. It is the adaptation of the parts to each other and the organization to form a complete whole. Have you ever seen a garden wrecked by a hail or wind storm when the harmony and unity has all been destroyed?

One can always go farther, noticing the number of petals, the grouping of patterns and on into the study of dynamic symmetry as found by the early Greeks.

Thus, if we study plant life, we also become familiar with the artists' and designers' points of view. The farther we carry the acquaintance the more we can enjoy fully and endlessly the interest, beauty, and value of the life around us. We have only to observe to find wealth.

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The Tame Deer of Nara

By GORDON ALEXANDER

SOMETHING like two hundred years ago, so it is said, certain priests of Nara, Japan, began to win the friendship of a herd of the little Japanese spotted deer. Today every tourist who visits this ancient village may walk among the deer as if they were so many friendly dogs that had never known any other existence.

Nara is famous for several "tourist sights", so the tourist visitor may arrive expecting only to visit temples and see great statues. He is, therefore, pleasantly surprised to come upon a band of a score or more of deer, peacefully walking about in the center of the village.

TWO TAME BUCKS OF NARA

These deer are an unexpected experience for the many visitors who come to this historic Japanese city

Nara was once a great city; in fact, from 709 to 784 A.D., it was Japan's capital. Most of its interesting artistic and historical objects date from that early period, when it was many times its present size. Her *Diabutsu,* cast in 749 A.D., is the largest bronze figure in Japan; and the great bell of Nara, cast twelve hundred years ago, may still be rung by the casual passer-by upon payment of a small fee to the priest in charge. Thirty-six tons of copper and a ton of tin went into the casting, but the titanic musical rumble set up when the bell is struck, although it penetrates the whole countryside, seems to make no impression upon the deer. They have become as accustomed to it as to man himself. It may be to see such things as the *Diabutsu* and the great bell that the tourist visits Nara; but more often than not it is the picture of the tame herd of deer that he carries away with him. The deer really seem much more fitting in modern Nara, a delightfully peaceful village, than her inheritance of magnificent structures from centuries past. The deer really belong.

The shop-keepers have a steady source of income from supplying food to visitors who wish to feed the deer. We purchased several packages of specially prepared wafers. At the same stalls where we purchased the wafers there were on sale many objects carved from the antlers, discarded each breeding season. Nara is certainly deer-conscious, and she may well be proud of her peculiarly novel civic asset.

Birds' Eggs Without Robbing the Birds

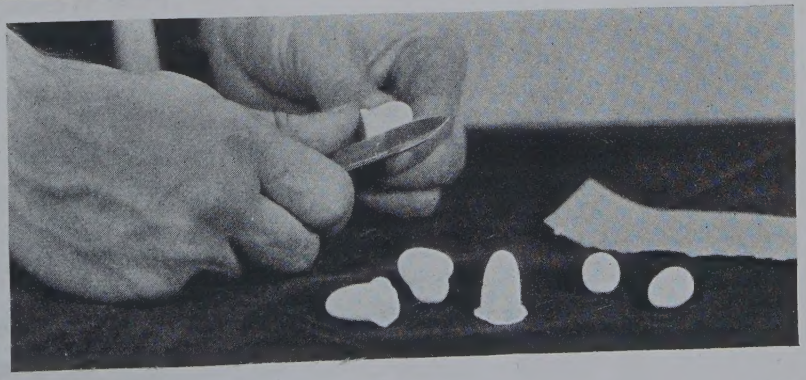
By GEORGE A. SMITH

THERE is a law among all good Boy Scouts that innocent birds should never be robbed of their precious eggs in order to assemble a collection unless a definite scientific motive prompts the action. There is, however, a desire on the part of most boys to gather unusual and attractive-looking nests for Nature collections. These nests may be made to look natural by placing in them artificial eggs that simulate in appearance and number the eggs that would be found under natural conditions.

Artificial eggs may be made easily from plaster of Paris, and colored with water colors in a manner so nearly like the actual eggs that one will scarcely suspect that the eggs are unreal. This is especially so when the eggs are given a natural setting in a bird's nest.

When teaching a lesson on birds to a Nature Study class, I once remarked that I had in my collection a number of rare eggs. Before passing these around I warned the class that the utmost care should be used in handling the valuable eggs. The eggs of many of our rare birds, I said, are worth many dollars apiece. At the end of this talk, I dropped the egg. The class gasped. Placidly picking up the unbroken egg, I explained how natural-looking eggs could be made from plaster of Paris, with the advantage of being inexpensive and not having upset the plans of any bird family, or reduced the number of insect-eaters.

To make artificial eggs, use ordinary modeling clay for the moulds in which to pour the plaster of Paris. To make a mould, round off the end of a stick of soft wood until it matches as nearly as possible the pointed end of the egg to be imitated. (Most bird books and many encyclopedias contain pictures of birds' eggs in natural size and color.) Press the stick into a block of the modeling clay deep enough to make a mould for the egg. Remove the peg without disturbing the shape of the mould. Mix up enough plaster of Paris to fill the moulds that have been prepared. Use clean cold water to mix up the plaster of Paris, making it thin enough to pour freely into the moulds. The mixture will set in a few minutes, therefore it will be necessary to use it as soon as it has been mixed up. Fill the moulds, and shake them gently to eliminate the air bubbles. After the plaster of Paris has hardened, pull off the clay and complete the shaping of the eggs with a penknife and fine sandpaper. The same modeling clay may be used repeatedly in making the moulds.

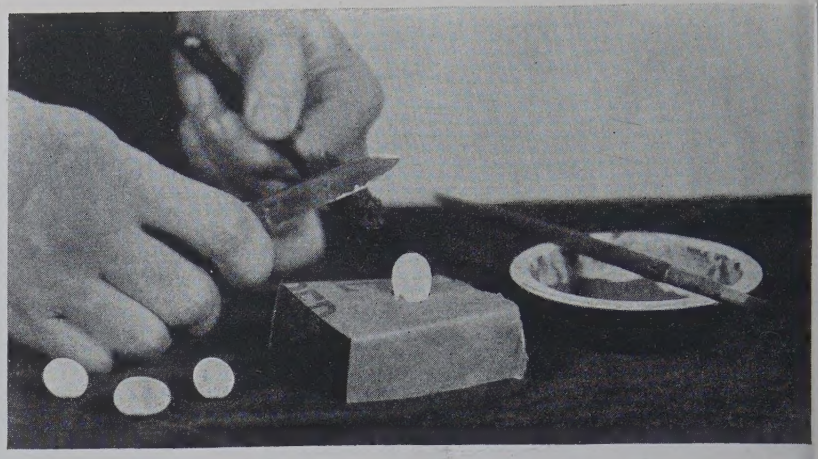


A SET OF PLASTER EGGS AND HOW ONE MAY EASILY PREPARE THEM

The nest of the red-eyed vireo above contains eggs that have not been stolen from the birds. The moulds are made by pressing the shaped end of a piece of wood into modelling clay and filling the moulds with plaster of Paris. Then the eggs are shaped with a knife and fine sandpaper as shown at the right.

DECORATING THE BIRDS' EGGS

Speckled eggs are made by drawing the knife blade over a toothbrush wet with a heavy mixture of the desired color



Use water color paints to give the eggs the colors desired. In imitating the eggs that are speckled, brush on the background color, then add the specks of color by drawing a knife blade over a toothbrush that has been charged with a rather heavy mixture of the color desired and you have a bird's egg.

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DECORATION DAYS *By* ADA CLAPHAM GOVAN

I HAVE been taking stock of my supply of string and darning cotton in happy anticipation of our backyard "Decoration Days". If you don't celebrate decoration days in your backyard, you are missing a store of memorable incidents. Instead of our clothes-lines being draped with the family wash, from middle March till July they are mostly festooned with six- to twelve-inch lengths of string and darning cotton. In one morning two hundred pieces were carried away by orioles and robins, and I'm sure it was two hundred because I cut and hung the string. In two days, more than seven hundred pieces were taken.

As usual the ladies did most of the work while the gentlemen cheered them on from the sidelines. The females load themselves down till they look like loosely put together balls of twine, that have taken unto themselves wings.

I watched one patient little builder carefully test and select piece after piece of yarn and wool. She painstakingly looped it up, here and there, till she had a fairly well balanced load. Then she started on her way back to the new home. She got about twenty feet from the clothes yard when there came a flurry of wings and several sharp, vitriolic squawks. Two wood thrushes shot out of the birch clump. There was a brief tussle punctuated with even worse language. Then my Lady Oriole hustled back to the clothes yard and sat herself down to sulk for awhile. And I don't wonder! The thrushes had hi-jacked her, and stolen from her by main force, every atom of the material she had worked so hard to get together.

And so it goes. After resting a few moments, and with sorely wounded feelings somewhat restored, she painstakingly selected a second load, and this time my little friend got away safely.

I found myself marveling at the infinite patience and courage of these tiny creatures, in overcoming the countless obstacles that balk them at every turn. It could not fail to inspire afresh, many who are weary at heart. In fact, such inspiration forms much of the benefit that one gets from observing the ways of our wild friends.

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In the June issue of Nature Magazine, Samuel A. Harper tells us of the wild wonderland of Quetico Provincial Park in Canada; Charles Fitzhugh Talman writes one of his interesting weather stories; Dr. Julian D. Corrington gives us another peek through his microscope; John Lindsey Blackford has a charming essay on the Yellow Warbler. Then, of course, more rotogravure pictures and the new Conservation Section packed with information of vital importance to all interested in the preservation of our wild life.

INHABITANTS FOR THE SALT WATER AQUARIUM MAY BE FOUND IN THE TIDAL WATER

Many interesting little fishes may be seined up if one is quick and expert enough to catch them before the backwash of the waves carries them away

A Salt Water Aquarium

The seashore holds much interesting life

By AYCOCK BROWN

Illustrated by Jex

PERSONS living on the seashore have an opportunity to develop home aquariums along new lines. Tiny little fishes and other inhabitants of salt water may be kept alive for months and weeks in an ordinary glass jar, with oxygenating plants, clean white sand and a few scavengers. One soon learns that the salt water method is practically the same as with the tropical and goldfish aquariums common in so many homes today. They are no more trouble and less expensive.

It is a simple matter to establish a salt water aquarium in the home. With just a bit of experimenting a person soon becomes expert. An old glass jar of any type with a capacity of one gallon or more, and a large opening at the top is suitable. Discarded battery jars will be found very useful for the purpose.

It is important to clean the jars thoroughly before using. Soap and water make good combinations for this cleaning process, but ordinary table salt rubbed on the glass surface to cut off discolorations will prove even better. The result should be a clear sparkle when filled with clean water.

One should have everything in readiness before the specimens are caught. Sand and pebbles from along the beach may be used in the bottom of the jars after a thorough cleansing. It is important that sand be absolutely clean before it is placed in the jars, otherwise when the water is added it will be cloudy, making it impossible to see the fishes plainly.

Clear water cannot be gotten from the ocean or sound on windy days because sand particles from the bottom will be stirred up, so choose a calm day. If poured into the jar carefully the sand will not be stirred up, although if it is it will soon settle to the bottom.

With the sand and water in the jars the next step is to secure oxygenating plants that will prove suitable. These **plants** have a variety of local names, but are generally known as salt water moss, sea lettuce, sea beans, and eel grass. The mosses and the species known as sea lettuce are not only satisfactory but also add a colorful green to the aquarium.

If plants are used that are clinging to empty shells so much the better because the shell and plant combination will add a distinctive salt water atmosphere to the jars. The plants float towards the surface from their anchorage and with two or three small fishes swimming around, occasional snails and other small inhabitants of the sea crawling on the bottom of the jar, a most unusual and interesting finishing touch is accomplished.

The equipment needed for collecting specimens is a makeshift seine of mosquito netting or an ordinary cloth bag, and a small jar or pail for transporting the catches from the shore to the aquarium. They may be caught in the surf if one is quick enough to get them before the backwash takes them into the breakers again, but the best assortment is found along the shallow shores of sounds and lagoons.

With a great many varieties to choose from it is well to make a selection of the smallest fish. For a gallon jar the fish should not be more than an inch and a half in length. A three- or four-inch specimen in a gallon jar will soon use up all the oxygen and die.

When first captured most small fishes have a dull and ugly color caused by fright. A few days in the aquarium and their natural markings and gay colors return. Practically every species has distinctive colors or some unusual marking that make it an interesting study.

It is not necessary to learn the scientific names of the fishes. The most universal name for small fishes is just minnows. One of the most common species, found in lagoons where the bottom is muddy, is known as mud-fish. There are several different types of mud-fish; one may be a light brown with dotted rings of yellow passing around its body; another may be a darker brown with two sparkling, yellow rimmed eyes. There are several that have purple markings which blend into black, with a brown background over most of its body. One soon learns that mud-fish will live long in the home aquarium, where they seem contented to remain close to the bottom, apparently asleep on the sand.

SEEKING FISHES IN A QUIET LAGOON

Many interesting and colorful specimens for the aquarium may be found in such places

The young of porgies and sheepshead make interesting fish. They are colorful and active. The young sheepshead have burnished gold and white stripes encircling their bodies. The porgies, although a dull greenish color when first placed in the aquarium, soon regain their natural color which is a combination of green, blue, gold, silver and orange, with distinctive black stripes on their fins and tail. Both species become bold and gentle once they are acclimated.

The young of trout and shad may be kept alive several weeks although they do not show the action of some other specimens. Small spots make an interesting study, and even flounders, if one is lucky enough to catch a small specimen.

Occasionally one may catch some of the unusual specimens of aquatic life. Tiny gars, if handled properly and given a great deal of care in feeding, will live for some time in the jars. Their lazy movements are not signs that they are about to die. A tap on the jar and the gar darts quickly behind a plant leaf, reappearing cautiously when it thinks the danger has passed.

If one is fortunate enough to catch a sea-horse he has a prize indeed. Until one studies this unusual little fellow at close range one does not realize just how interesting it can be. Eel grass should be in the jar if a sea-horse is added. For hours at a time it will stay in the same position with its tail wrapped around a blade of eel grass, the little fin on its shoulders continuously in motion.

In some localities there is a small, slim, almost transparent fish known as anchovy. It is probably just some species of the minnow family, but the gay stripes across its back make it interesting. Seining around the banks of muddy bottomed lagoons one is apt to capture some young eels. They should be used because an eel is a good scavenger.

As one selects the specimens along the shores, he should be constantly on the lookout for scavengers of all kinds. Small clams can be used with some success although they may not live for more than a few weeks. There is a small black snail shaped like a cornucopia which makes a splendid scavenger, eating the slimy algae that may collect on the glass surface. Ordinary crabs if they are small enough will live for several days in the jars although they eventually die, as do many shell fish that depend on the rise and fall of the tides for their existence.

Ordinary goldfish food may be used occasionally, but one can easily obtain the right kind of food along the shores where the specimens have been taken. Clam meat taken from the shell may be carefully pressed dry of all juices and fed to the fishes. If wet clam is placed in the bowl the water almost immediately becomes a milky color. Dried shrimp, or particles of finely chopped fish also furnish good food. One should, however, consider the size of the fish and not overfeed. Every second day will do and then not more than they can clean up in from fifteen to thirty minutes. The fish become tamer each day, and, in a short while, will come to the surface to take food from your fingers. The scavengers usually take care of food that goes to the bottom.

The important thing about a salt water aquarium is to

keep it in a well-shaded place. If it is placed in the sunshine the water evaporates rapidly and a greenish algae appears on the glass. If the salt water evaporates to any extent it should be filled to its original surface by adding fresh water, because the water evaporates but the salt does not. To insure proper living conditions for the fish one should keep the water and aquarium clean.

The construction and developing of salt water aquariums, with their convenience of handling, the clear view they afford of fish life from all angles, and the small cost of maintaining them provides a means for those who dwell in seashore homes to know many delightful hours.

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In a "Marsh"

By H. E. BREWBAKER

A MARSH scene at night is depicted in the accompanying picture. The objects appear white, as the result of the reflection of a strong source of light. A stately elm tree stands out on a near bank of the marsh, along with an association of shrubs and small trees quite common under such conditions. Look closely and you will see a rather imperfect half moon to the right of the tree. The reflections of the moon on the water appear as large patches of riffles interspersed with quiet areas. A railroad track with small patches of snow on the near side of the ties is evident, also, in front of the marsh.

Observe carefully again to the right of the elm tree and a boat appears, carrying two hunters with their guns pointed into the air—and there they go, two mallard ducks, right over the heads of the hunters! But there is only one duck falling—not so good with such a perfect shot. These hunters must be scientists, and they are probably better scientists than hunters.

Overhead there appear three large clouds—one on the right being recognized as the original "magic carpet". "Wait a minute"—says someone who is always taking the joy out of life,—"there seems to be something haywire about this". And so the truth must be told.

The objects in this scene resulted from a very prolific fungous growth on the board walls of a sugar beet root cellar at Fort Collins, Colorado. The scene was discovered by men working in the cellar and it was not touched previous to taking the picture presented here. Fruiting bodies were not present so the species was undetermined.

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Can You Take Nature Pictures?

SINCE it was inaugurated last October, our rotogravure section has become more and more popular. Many readers have written to us in appreciation of it; many teachers have reported it useful in their classes.

Now our readers will have an opportunity to take part in the production of this section. Each month we will make a special award of twenty-five dollars for what the editors of NATURE MAGAZINE regard as the "Nature Picture of the Month." We will also pay three dollars a picture for all Nature pictures considered by the editors to be worthy of publication in this section.

Four issues of the rotogravure section are printed at one time and these have to be prepared considerably in advance. The next set of four issues, for which the awards apply, will cover the issues from October to next January. Photographs designed for this group of sections must, therefore, be sent in before July 15, 1935. By the same token, pictures for the subsequent series, covering issues from February to May, 1936, must be submitted before November 15, 1935. Entries submitted *after* July 15 will be automatically considered for the next group.

All pictures submitted should be accompanied by the name and address of the photographer, the date and place taken, identification of the subject, any mechanical photographic details involved and the name of type of camera used. The pictures should be Nature pictures—birds, mammals, flowers, insects, fishes, etc. The best criterion is the type of picture that has been reproduced in past rotogravure sections in NATURE MAGAZINE. No unusable pictures will be returned unless they are accompanied by return postage, and we cannot be responsible for photographs lost or damaged in the mails.

The basis of selection will be photographic excellence and natural history interest. Address all photographs to: Rotogravure Editor, NATURE MAGAZINE, 1214 Sixteenth Street, N. W., Washington, D. C.

PHOTOGRAPH BY MARY C. DICKERSON

NOW YOU SEE HIM, NOW YOU DON'T!

The sand-bug on the left is in the middle of his famous fade-away; the other is just sinking his picks and shovels into the sand

The Turbulent Life of the Sand-bug

By ROBERT CUSHMAN MURPHY

American Museum of Natural History

STEP into the wash of the surf on a sandy beach during midsummer, and you may find yourself startled by the semblance of a hundred half-seen whiskered faces peeping up from the bottom. Then, within the twinkling of an eye, the curtain of seething water streams back to sea and blots out the vision. By the time the torrent of gritty foam has gone, leaving the wet slope bare, there is no sign of life. Was it fact or fantasy? Before you can investigate further, the wreck of the next breaker swirls up, and the bottom is again lost beneath a foot of froth.

Now change your position a few paces along the beach. Stand quietly where you will be ankle-deep when the swell is half sucked back. Once more, "as through a glass darkly," bristly visages stick out of the surface of the sand that a moment before had seemed bald as an egg. Where the streaming is swiftest down the incline, you may even see the rotund bodies behind some of the faces torn from their anchorages and whisked pell-mell toward deeper water, only to vanish magically as soon as they touch bottom. A mad and riotous life it is, whipped and rolled and mauled by waves that never cease.

What are these teeming creatures? Rocky coasts, we know, swarm with kaleidoscopic life, but any naturalist will tell you that the lower strand of sandy beaches and the waters inside the outer breakers have no great variety of beings large enough to catch the eye. Rather, this joint strip of earth and brine forms more of an ocean graveyard than an environment for the living. Yet we now see that at least one astonishing animal fills the sand in numbers beyond imagination, however much its way of life may hide it from the casual observer. The mysterious beastie is the sand-bug, a crustacean, technically known as *Emerita talpoida,* which might mean—if zoological names may be said to mean anything—"the mole-shaped one who has served out his time." Whatever their name or antiquity may be, the sand-bugs, as Professor Leidy once remarked, are as thick in their proper habitat as currants in a plum-pudding!

The sand-bug has a range tens of thousands of miles in length and ten yards—or it may be only ten feet—wide. Those you find along the shores of other oceans than our own North Atlantic may be first or second cousins of the kind that dwells on the beaches of the Carolinas or Fire Island or Cape Cod, but you would need a very dull book and a lens to tell any of them apart. To all intents, one and the same *Emerita* occupies most of the world's temperate and tropical coasts, except those of Europe. In many places, such as India, Madagascar, Peru, Florida, and California, the sand-bug has been used from time immemorial as food for men. Indeed, it was by watching Indian fishermen on the broad shining strands of Peru, where the creature is known as the *mui-mui,* that I first became acquainted with it, long before I learned that it frolicked practically in my own dooryard on Long Island. But wherever you find it, its bailiwick is always in sandy beaches sluiced by waves from the open sea, and it leads the most turbulent life of any denizen of the great waters.

Now, for the sake of prying more deeply into the ways of this odd little neighbor of our bathing beach, let us scoop deeply with both hands under the backwash and run ashore. Plop the load down on dry sand, and a half-dozen or more of the sand-bugs may roll out, either to lie still as though dead, or to scuttle off backwards with the movements of miniature war tanks, quickly orienting themselves to a course down the slope. If the spot is level, or even inclining slightly away from the water, they may appear puzzled for a few moments. However, under such circumstances, another reaction quickly takes the place

TOP AND BOTTOM VIEWS

This shows the stalked eyes, the antennules or feelers, the full battery of sapper's tools, and the spear-point telson under which the female holds her eggs

PHOTOGRAPH BY MARY C. DICKERSON

of the one affected by gravity, for the tiny tanks will presently turn themselves and head, or rather "tail," directly for the ocean. A little experimenting with the stranded victims will prove that their primary directional responses, when they find themselves out of water, are two, and that these are more or less balanced one against the other. The first of them is geotropic, or related to slope; they like to run down-hill. The other is phototropic, or related to the source of strongest illumination, that is, to the glare of the sky above the sea. Either of these instinctive responses would tend to save their lives if they chanced to be cast high and dry. But a sharp slope away from the water fools them and poses a problem. In this case they soon demonstrate that the geotropic reaction is stronger than the phototropic; they forget the bright sky off shore, alas, and follow their weight down-hill in a direction which will do them no ultimate good.

On dry sand they are perforce creatures of the surface, and must grope their way as best they can toward the water. But if you place one of them on sand well wetted by the last wave, you may at the same instant say "Good-bye!" You will just have time to see the sand-bug tip up its snout and vanish hind-foremost, leaving scarcely a dimple to mark the spot. "Sand-mole" would be a more appropriate name. In a quart glass jar filled with water above three inches of sand, one of them will swim and tunnel its way to the bottom within a second or less.

The females of the North Atlantic sand-bug are about an inch in length, the males a third smaller. During August most of the females carry under their tails orange egg-masses, in some of which developing embryos are visible. The smooth, rounded carapaces of the creatures are of a sandy color, tinged with pinkish. Their bodies are shuttle-shaped, and when snugly folded up they show rather less in the way of protruding members than a "blimp." All appendages, in fact, tuck away securely, leaving a perfectly stream-lined exterior, but each pair has, nevertheless, its special function in locomotion and feeding. Thus while the hindmost are stirring the sand and scooping it outward, during the burrowing process, other jointed limbs are pushing and paddling the body into the hole it makes as it goes. While excavating, the sand-bugs always work against the prevailing current, with the useful result that each run-off of the waves leaves them facing seaward as they stand nearly upright in the sand, with only the eyes and antennules exposed. Ceaseless activity is necessary for retaining their positions, for with each wave the topmost layer of sand is transformed into a fluid and every solid object near the surface is undermined. Their existence is like that of a trapeze acrobat who never stops performing.

The inefficient-looking eyes of the sand-bugs, mere spots at the ends of thread-like stalks, must serve their purpose well in warning their owners of shadows or of large opaque dangers such as curlews, or gulls, or men. Certainly the tufted faces withdraw, and leave no trace, within an instant after you have darkened their hiding places.

Little neatly-folding doors of the mouthparts and anterior limbs of the sand-bugs, protected further along their edges by bristly hairs, serve to keep the sand out of their mouths and gullets while the incoming wave is bearing up their next meal. Up to this point they remain shut as tight as a chest. But as the water starts back, two long curved flagella, lined with hairs like the feathery antennae of a moth, are whipped out from within the doors. It is these structures that give the sand-bugs their bushy-snouted appearance and that also make the tiny V-shaped ripples in the sand which, in tranquil weather, may give the first inkling of their presence. As the water rushes through the finely fringed flagella, microscopic organisms, both plant and animal, such as diatoms, radiolarians, and foraminifera, are entangled in these fish nets. Then, in the calm moment while the wave is out, the nets and their contents are drawn once more behind closed and locked doors, and during the subsequent inrush of the surf the happy sand-bug scrapes off and swallows its meal.

The active life of the creatures is, therefore, the brief period of the backward wave, when they hang on for dear life with one set of appliances and gather in their subsistence with another. During the less devastating influx of water that follows, they find opportunity to enjoy the fruits of their toil. Like the human heart, the sand-bugs take all their rest between beats. Swimming, burrowing, or perambulating, moreover, they go through their existence tail-foremost. *A posteriori* beings they are, indeed, for they may be said to reach every conclusion backwards!

HYACINTHS

By
JOHN LINDSEY BLACKFORD

AS I PASSED from stepping-stone to stepping-stone along the path to the hyacinth pool, I paused, on this May morning, enthralled by the pageantry of the dawn. It had come like the opening of a rose and its colors were spread upon the eastern sky in everchanging hues. Silver it was, near the zenith, merging into an effervescent tiara of pink. Beneath, violet lights moved upon a roseate curtain, and under it all a bolder crimson outlined the gateway through the eastern hills. Gradually the colors deepened until the gateway became a fiery portal.

Gazing at such splendor, I do not think it strange that there should have been reflected from the mirror of my fancy a picture of celestial gates beyond. But, though ten thousand lambent jewels glittered upon the imposing port, my heart did not yearn toward that eternal bourne. What sweeter land might there be than this spot on a May morning?

Once more I followed the sequent stones to the pool, sensing the fragrance of hyacinths resting upon the air as lightly as did the bubbles from the waterfall upon the surface of the lakelet. Each nymph-like flower was a scented star cluster upon a lush green stalk, and their white beauty encircled the marge. I found a place beside them upon the grass where the trees did not enclose the pool; and as the flaming curtains parted above the hills and the aureate sun arose his rays fell upon us like a flight of golden arrows. Truly, to greet such a day befittingly, one should have wings.

Bending above one of the flower naiades I breathed of her incense-like perfume. At sight of me a brown water beetle paddled hastily back to the depths, but a dusky butterfly alighted gracefully nearby to taste the honeyed sweetness there. Then my flower love drew me back to her.

Between the fragrance of the hyacinth and the other nectars and scents of garden and field there is a distance as unspanned as between a kiss and the mere writing of it. Lilacs and violets are dear to us; lavender and mignonette recall the precious hours of so long ago, while the musk of roses added to their beauty seems always a miracle. With the scent of jasmine we sense again the sweet delirium of some too great joy. Beyond the bowers of the lawn, over the picket fence of the old garden, there are others luring us; evening primroses, hawthorn, syringa, and pungent monarda.

But the fragrance of the hyacinth is other-worldy, and for such a bouquet what words will serve? Each one I try is as ineffectual as a broken wing. Exquisite—glorious—beautiful—they are all calumnies!

To make a choice among perfumes seems as futile as choosing between notes on a violin. They are all so wonderful.

Still, for you and for me, there is always one that remains most with us. Into my thoughts there comes ever the hyacinth, haunting in its ethereal loveliness, beguiling me with its passionate odor.

The passing of the flower enchantress comes like the end of a dream, leaving with us memories, souvenirs as of a love that bloomed delicately within our arms, touched our lips ever so lightly, and then crept silently to rest.

Yes, I am at variance with the old philosopher. Had I two loaves of bread, I, too, would sell one and buy a hyacinth for my soul's sake. Then I would part with the remaining loaf and buy another.

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TO THE GRAND TETONS

Last month we announced plans to take a party of Nature Magazine readers on a seven-day camping and trail trip into Grand Teton National Park. In case you missed this announcement and are interested in spending a vacation in one of our most glorious mountain sections with a group of like-minded outdoor folk, just write to Richard W. Westwood, Chief of Editorial Staff, Nature Magazine, 1214 Sixteenth Street, Washington, D. C., for further details of this trip. The party will be limited to twenty members. While in the Park it will travel with a full pack outfit and spend a week of roughing it in the high country.

PLAYGROUNDS FOR ALL

Last year was formally declared as National Park Year. Postage stamps were specially issued to commemorate the fact, and the world at large was urged to visit these great outdoor playgrounds. Thousands heeded the suggestion and the numbers entering the parks by motor and by rail rose to the highest figure in several years.

Every year should be National Park Year. Endowed as we are with these great areas from Acadia in the northeast, the Great Smokies in the south to Mt. McKinley Park in Alaska and Hawaii National Park in the Pacific, we have an incomparable variety to draw upon in these great recreational areas. The pages that follow are devoted to pictures of these areas in the United States and Canada.

Above is the impressive Half Dome with its sheer wall bespeaking some ancient geological cataclysm. It is known to all who have visited Yosemite National Park in California. Photograph courtesy of the Union Pacific Railroad.

One of our newer Parks is Grand Teton National Park in Wyoming embracing the most scenic portion of the Teton Range. Above we see the majestic peaks across Jackson Lake, which is just outside the boundaries of the Park. Here is an area attractive particularly to the hiker, climber and trail rider, for it is, as a whole, little developed as to highways. Photograph courtesy of the Union Pacific Railroad. Below is a camp at the base of The Ramparts in the Tonquin Valley of Jasper National Park in Canada. This region is reached only by trail and is unspoiled in its primitive character. Photograph by Arthur Newton Pack.

Mt. Rainier merits its selection as a National Park because of the solitary, snow-capped grandeur of the great peak. Here the Union Pacific photographer has caught it with its sparkling mantle of white, wreathed in a bit of cloud and reflected in the crystal waters of Reflection Lake.

As the visitor enters Yellowstone National Park, the best known and most visited ot our parks, by way of the western or Gallatin Gateway, he will pass Castle Rock. Photograph courtesy of the Chicago, Milwaukee, and St. Paul Railway. "Glacier is different", say those who visit and love Glacier National Park. The view of Grinnell Lake and Glacier below may suggest why. Photograph by Hileman, courtesy of the Great Northern.

Many have paused, as does this rider, to admire the pyramid-like grandeur of Mt. Assiniboine, highest peak of the Canadian Rockies in Alberta. Photograph by H. Armstrong Roberts.

Born of an ancient volcano, its waters an unbelievable blue, Crater Lake is a scenic gem of rarest scintillance. Young as a park but ancient in geologic significance, it defies adjectives and must be seen. Photograph courtesy of the Union Pacific Railroad. July is the month of Flowers in Yellowstone Park and below are mountain anemones. Photograph courtesy Northern Pacific Railway. Bears are numerous in many of the Parks, the one below being a resident of Glacier National Park. Photograph by Hileman.

There is infinite variety in the strange and colorful formations to be found in fantastic Bryce Canyon National Park. One of the most typical is this, which is, for obvious reasons, called Queen Victoria. Photograph courtesy of the Union Pacific Railroad.

One of the great charms of Jasper National Park in Canada is the fact that one can leave the comfort of the main lodge and take the trail into unspoiled wilderness, stopping perhaps at such spots as Castleguard Falls. Much of Jasper Park is unexplored and many of its lakes and peaks have not been named. Photograph courtesy of the Canadian National Railways.

Below are the crystalline, colored terraces of the Mammoth Hot Springs in Yellowstone National Park. Scientists estimate that thirty years are required to deposit one inch on this formation. Photograph courtesy the Northern Pacific Railway.

The Alpine grandeur of Rocky Mountain National Park, Colorado, is no better shown than in this striking picture of Dream Lake by the Union Pacific photographer.

Zion National Park has been aptly described as "Yosemite Valley done in oils". Vivid, cathedral-like, this marvellously scenic Park is usually visited together with Bryce Canyon Park and the Grand Canyon. The region was named by the Mormon settlers who felt that the great mountains forming the canyon were, in truth, temples of God. Photograph by the Union Pacific Railroad.

Preservation of native wild life is an important part of the policy of the National Park Service. Below are two black-tailed deer taking a good look at the photographer from the safety of a ledge in Glacier National Park. Photograph by Hileman, courtesy of the Great Northern Railroad.

Mount Baker, Washington, is not a National Park but is another solitary mountain comparable in some ways with Mount Rainier, and a notable recreation spot. Photograph courtesy of the Chicago, Milwaukee, and St. Paul Railroad.

Romance on the Ptarmigan Wall. This is an appropriate title for this picture of one of the gorgeous scenes in Glacier National Park. The Ptarmigan Wall Trail is one of the most spectacular of the many mountain trails that lure the hardy folk to the back country of this Park. Photograph courtesy of the Great Northern Railroad. There are few more imposing and awe-inspiring sights than sunset over the mountains that rim about Maligne Lake in Jasper National Park, and the purple afterglow bathes their whiteness in ethereal color. Photograph courtesy of the Canadian National Railways.

"Where does the road go", ask visitors to Yellowstone National Park on the Gardiner-Cody tour when they come to this point. It is known as "Hoodoo Rocks" by some and "Silver Gate" by others. Photograph courtesy of the Northern Pacific Railway.

Bear grass in Glacier National Park is one of the most striking of its many flower forms. Below, two deer are caught in the act of striking. Photographs by Hileman, courtesy of the Great Northern Railroad.

Emerald Lake is one of the many beauty spots visited by those who go to the Canadian Rockies in the vicinity of Banff and Lake Louise as a vacation ground. It is accessible by road and from it lead many trails followed every year by those who seek to get off the beaten track on foot or on horse. Below, a party of hikers at Lake Louise set out for a hike with glorious Mount Victoria across the lake as an incentive. Photographs courtesy of the Canadian Pacific Railway.

The Great Smoky Mountain National Park is the baby of the National Parks in terms of years, although not in size. Here we see the rugged mountain forests of this Eastern playground. Photograph by Thompson Brothers. Below, two hikers in the Canadian Rockies have attained the height they sought. Photograph by the Canadian Pacific Railway.

Looking up the Merced River in Yosemite National Park toward Washington Column. Below is a mountain sheep in Jasper Park. These horned monarchs of the high places are characteristic dwellers in several of the northern National Park areas. Protection is enabling them to hold their own, or, in some instances, to increase.

There is imposing majesty in the array of mountains at Moraine Lake between Banff and Lake Louise. This is well called the Valley of the Ten Peaks, each one of which seems to challenge the mountain-climber to new endeavor. Photograph courtesy of the Canadian Pacific Railways. Below is a beautiful picture of Mirror Lake in Yosemite National Park. Photograph courtesy of the Union Pacific Railroad.

★ Conservation ★

A section of Nature Magazine devoted each month to the expression of practical opinions on the vital issues affecting our use and abuse of natural resources, including wildlife, and dedicated to the purpose of assisting Americans to play a militant part in the attainment of constructive conservation aims.

ARTHUR NEWTON PACK, *Editor*

EXPLOITING WILDLIFE

★ The amount of advertising of guns, ammunition, clothing, footwear, and other gear for sportsmen one sees in the sporting magazines is never-ceasing cause for surprise. The great display seems really to be more than the "traffic will bear." To whatever extent advertising is excessive, it is propaganda for the maintenance and increase of hunting. As propaganda, it is, furthermore, entirely misleading, for all well-informed and candid observers know that hunting has passed its peak in the United States and must continue to decline. Saying nothing whatever of the merits of hunters or of hunting or as to their share in responsibility for the decline of game, that decline is an inevitable consequence of the more and more intensive occupation of the land by human beings.

The growth of population in the United States since colonial days is one of the marvels of the world. The number of people is now fifty times as great as in 1776. Impressed by this continuous and great growth, business men have thought only in terms of steady expansion and mass production.

The depression may have slightly altered this point of view, but according to what population experts tell us it must be given up entirely. Growth of population is known to be slowing down and the total for the United States is expected to become stationary or declining within the lifetime of persons now living—that is, before the end of the present century.

Meanwhile the rate of increase is becoming smaller every year and the expanding market predicated by those addicted to "boom" psychology must definitely be relegated to the limbo of idle dreams. Some suggest escape by increase of foreign trade but this is a false hope as the populations of other countries also are becoming stationary and all of them are exerting every effort to be self-sufficient economically.

Not only such factors controlling the general situation should be taken into consideration by dealers catering to the wants of sportsmen, but another, vitally affecting their field alone, namely, the steadily diminishing supply of game. Disregarding exceptions due to local efforts at production, which do not affect the general situation, game has steadily dwindled in the United States. Saying nothing about overshooting as a cause, decrease in game, and most other wildlife as well, inevitably follows increase of the human population and extended occupation of the land.

Although population growth is slowing up, more land than at present in use will be taken over by people and much of that occupied will be used more intensively, thus more completely eradicating wildlife. The long-time prospect for wildlife as an object of sport seems almost confined to private, or possibly wisely restricted public, establishments where game management will be intensively practiced. As to wildlife for its own sake, the only safety is refuges, which it is to be hoped will be adequate in size and quality to preserve permanently noteworthy representations of all of our interesting species.

Business built on wildlife exploitation must necessarily diminish and if its proponents could only see the light now, and make plans for the future based on realities, it would greatly assist in present efforts to halt the rapid process of extermination of wildlife. It would do the indispensable, furthermore, in preserving a nucleus for stocking the management areas and the refuges upon which our future hopes depend. Such conservative action might, moreover, assure the continuance of sporting trade on a moderate scale. If, on the contrary, the business goes full steam ahead as long as shootable natural game supply can be found, some now grizzled gray will see the end.

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A LETTER TO THE EDITOR

★ On various occasions we have had a more or less clear realization that a share in our wildlife should be surrendered to all our neighbors who live in contact with it, and by neighbors we mean human beings, and those that man is pleased to call the lower animals. We may even have attempted to express such ideas in words, but we never felt satisfied with the result of our trial. We therefore welcomed the letter that we here quote, a letter from one of a family who have lived much in the outdoors, and not always where living has

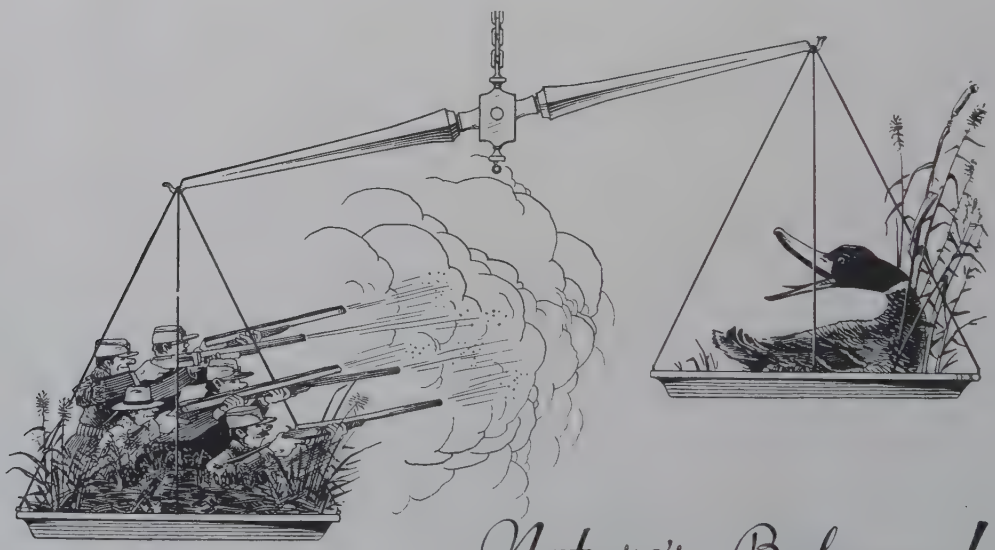
been easy, but who have learned love and tolerance.

"Dear Mr. Editor:

"I have a problem in a field in which I know you to be well versed so will take the liberty to acquaint you with my troubles. You see, I have taken a liking to some Great Horned Owls in northern Michigan some distance from any farms or poultry yards and it is really concerning these Owls I am writing you. In the first place these Owls don't know whether or not they still have the right to get their livelihood as Nature intended they should. Living out in the wild they are not tempted by a lot of uncooped poultry, so escape some of the complexities met with by more urban Owls but still they are puzzled and unable to cope with the ethics injected into their daily food-getting activities. They are bewildered—man generously destroys their food, often for mere pleasure, and then persecutes them for securing what to them is necessary for life. They would gladly feed on small 'bugs' entirely but are unable to make such a drastic change in their way of life, so must continue to feed upon larger animals.

"I have been thinking how I could help these Owls. I thought that if I owned some of the Game I could help them by turning my share over to them and I have some friends who would also contribute, for they enjoy seeing the Owls and hearing them hoot. Some of my friends feel that man is too ignorant a judge to condemn Nature's animals to extinction, especially when so many selfish motives are involved. They feel that some day in the future hunting by man will diminish and that the sense of values of people living at that time may have changed even to the extent of getting their greatest source of pleasure and feeling themselves in closest communion with Nature when listening to a Great Horned Owl hoot from behind camp or from a perch on a spruce over across a meadow. Well, before giving any of the Game to the Owls I must know if any of it belongs to me. Some say that the Game belongs to the Sportsman and that any non-game animal reverts to the property list of the Sportsman once the prefix is dropped. If it is true that the Sportsman owns the Game, I suppose I can become part owner by becoming a Sportsman through the purchasing of a hunting license. Part ownership of the Game granted, either by becoming a Sportsman or by rights decreed to ordinary citizens, am I privileged to give my yearly allowance of Game to the Owls rather than to bulge my own bag with it? Can my hunting permit be consigned to a Great Horned Owl?

Sincerely yours, Adolph Murie"



Nature's Balance!

"Why does every hunter feel he has a duty to perform in shooting every hawk, owl or eagle he sees?" asks the *Jack-Pine Warbler,* publication of the Michigan Audubon Society. "A south sea island recently imported hawks and owls to rid it of a mouse infestation. Are they not as valuable to us? They are, and wherever these birds and the snakes have been consistently killed, mice have increased at an alarming rate. It is worth repeating that these birds are underrated as mousers while cats are overrated."

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"There is not now and never has been a national policy for the conservation of wildlife resources. There is not now and never has been a Government agency entrusted with the prerogatives of general wildlife conservation. There is not now and never has been a Federal plan for the maintenance or preservation of the tremendous economic and social values inherent in the fur, game and fish species. Such a national policy is badly needed for all game as well as ducks." Jay N. Darling, Chief of the United States Bureau of Biological Survey.

The hunting element has been administering a conservation hypodermic too long, Mr. Darling. Let's have more stimulant and less dope.

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According to the figures released by the Biological Survey there were 5,702,061 hunters' licenses issued in the United States in 1933. These brought a total revenue to the States of $8,754,827.57.

Wildlife in the National Forests—

Who Owns It?

A QUESTION of great interest to conservationists has recently come to the stage of a definite showdown. The 163 million acres of National Forest within the United States contain much wildlife. Such of this wildlife as may be classified as game has, in the past, been controlled by the game and wildlife conservation laws of the various states—not by the Federal Government. The United States Forest Service has recently proclaimed and published its right to the custodianship of all wildlife within the National Forests, whether so-called game or not. The Forest Service has not said that it will immediately insist upon taking over the management of game from the game commissions of the states where the National Forests are located, but it claims the right to do so when, as, and if the Secretary of Agriculture feels it to be in the public interest. The program is known as Regulation G-20-A of the Forest Service.

Conservationists might momentarily assume that such a regulation contemplated putting game in the National Forests in the same class with game in the National Parks—that is, a step in the direction of restricting killing. However, it is nothing of the kind. The reasons given by the Forest Service for taking this stand are quite the contrary of any such viewpoint. It is claimed that in places wild game on the National Forests has been allowed to become *too plentiful* in proportion to the degree of food available, and that instances have arisen wherein State Game Commissions have failed to recognize this situation by regulations and have failed to promote open seasons or special regulations for hunting that would result in reducing the amount of game to the capacity of the forest area.

ELK PROVIDE AN IMPORTANT ISSUE
Their relative rights to grazing areas compared with cattle and sheep are a subject of argument

It should be remembered that, particularly in the Southwest, our National Forest areas are used on a permit system for the grazing of domestic stock. This grazing of domestic stock is regulated by scientific principles, in accordance with the amount of forage or feed available. The Forest Service feels that it should have the same rights to regulate wildlife. In short, where an area is used by both wildlife and domestic livestock, the Forest Service believes it should have the right to reduce the livestock in favor of the wildlife, which right it now has, or to reduce the wildlife in favor of the livestock, which right it wants to have and hopes to get by this new regulation.

Herein lies an element of danger that conservationists should recognize To be sure, it is undoubtedly true that regulation of the grazing of domestic stock is better carried on in the National Forest areas than it is anywhere else, and that it is handled according to stricter principles of conservation. This fact is beyond question. However, is it in the ultimate public interest that even a government bureau with a pretty good record of administration in the public interest should have the authority to sacrifice wildlife to the grazing of sheep and cattle? Here again we face that strange economic anomaly, in that our present government is undertaking an active program of livestock reduction on the one hand, while, on the other hand, it proposes to protect the livestock interests against possible encroachment by such animals as deer, elk and antelope. It would seem that such land administration planning as we have suggested previously under our discussion of the Taylor Grazing Act should view all these problems together and put the whole Federal house in order from a conservation standpoint before it undertakes to create a possible situation wherein commercialization must be defended against wildlife.

At the American Game Conference in New York in January Regulation G-20-A of the Forest Service was one of the topics for discussion. Mr. Silcox, Chief Forester of the United States, made a strong plea for the new regulation on the grounds we have stated. It may have been an unavoidable circumstance, but, after de-

livering his paper, he did not remain to hear the arguments of such Western States as Montana, Wyoming and New Mexico, not only defending the long-time principle of the right of states to control the wildlife within their borders, but also suggesting that, as a whole, the Federal record of conservation and wildlife administration had not proved such superiority of judgment in the public interest as would justify the granting of such additional authority. The livestock interests in the West are a thorn in the side of many western state game commissions. These game commissions see no reason why the Federal Government should be given an authority that would enable them to favor livestock in opposition to wildlife.

There appeared at the Game Conference at this point the same unending controversy previously referred to between two opposing groups—namely, between those who want practically no conservation at all and those who feel that the only way to get it is through highly-organized Federal autocracy. Somewhere in between lay the thought that we have enunciated before—namely, that true conservation can progress only in proportion to education and local public support and good will. However ideal may seem the position of Federal autocracy in conservation, history has shown that when all authority is taken out of local hands, local interest is inclined to wane. The principle of "let George do it" becomes the principle of "let Uncle Sam do it," with the result that the individual feels himself so small a unit in proportion to the Federal Authority that he might as well leave everything to outside enforcement of law and regulation and pursue his own way, to whatever extent he can get away with it. To us, it seemed that the opponents of Regulation G-20-A had the best of the argument. They were offering cooperation and mutual education in solving the problem as opposed to a simple autocratic principle. Our conservation problem is too complex to submit it to such a control.

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President Receives Forestry Award

PRESIDENT Roosevelt is the first American to receive the Schlich Memorial Award for Forestry. This honor was conferred upon him by a committee of the Society of American Foresters.

The award originated in England to perpetuate the memory of the late Sir William Schlich, at one time Inspector General of the forests of the Government of India, and afterwards Professor of Forestry at the University of Oxford.

"A forest is not solely so many thousand board feet of lumber to be logged when market conditions make it profitable," the President said in accepting the award. "It is an integral part of our natural land covering, and the most potent factor in maintaining Nature's delicate balance in the organic and inorganic worlds. In his struggle for selfish gain, man has often heedlessly tipped the scales so that Nature's balance has been destroyed, and the public welfare has usually been on the short-weighted side. Such public necessities, therefore, must not be destroyed because there is profit for someone in their destruction. The preservation of the forests must be lifted above mere dollars and cents considerations.

"The handling of our forests as a continuous, renewable resource means permanent employment and stability to our country life. The forests are also needed for mitigating extreme climatic fluctuations, for holding the soil on the slopes, retaining the moisture in the ground, and controlling the equable flow of water in our streams. The forests are the 'lungs' of our land, purifying the air and giving fresh strength to our people. Truly, they make the country more livable.

"There is a new awakening to the importance of the forests to the country, and if you foresters remain true to your ideals, the country may confidently trust its most precious heritage to your safe keeping."

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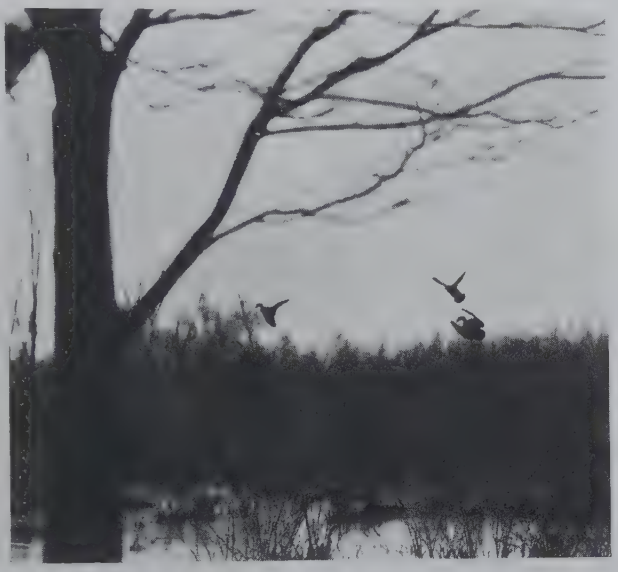
Counting the number of big game animals on the National Forests is one of the jobs of the forest rangers. The results are often interesting, and serve to show what wild life will do under favorable conditions of management and protection. The total number of deer on the National Forests last year was over 940,000 as against 938,000 the year before. Mountain goats had increased from 20,000 to something less than 22,000, while mountain sheep had increased a bare 500. There are still more than 5000 grizzly bears on the National Forests, 4500 of which are in Alaska. Among the states, Montana leads with 465. Utah has four, Oregon one.

Have We Learned Anything?

Does the disastrous year of 1934 show us the vital needs of 1935?

Now that our ducks and geese are headed for northern breeding grounds, and we face the vital question of what we are going to do for them in 1935, we must look back at 1934 as the most critical year that the wild waterfowl of North America has ever encountered. They had been subjected, since the occupation of the country by Europeans, to constant and increasingly severe pursuit for food and sport. In the United States and southern Canada, where intensive settlement, with its agriculture and drainage, has been reducing their breeding grounds for half a century, a long period of drought years, culminating in the most severe one ever recorded, has practically eliminated the remnants of the formerly populous nesting grounds. In the face of certain and progressive diminution from year to year, they have continued to suffer from a system of pursuit in which the ingenuity of man has encountered a minimum of restraint. Such restrictions on the devotees of sport as were permitted to exist have proven to be pitifully ineffective.



BLACK DUCKS DROP DOWN TO ROOST

Reports from Canadian observers indicate an alarming falling off in the numbers of this closely pursued eastern species

It seems fitting at this time that we review briefly some of the factors that within the past year have affected the fortunes in North America of this group of birds, which in former times occurred in almost incredible numbers. We therefore present reviews of a number of reports that have passed over our desk within that period, with such comments on the purpose and results of the activities as seem pertinent.

THE PRESIDENT'S COMMITTEE. Early in January, 1934, the Secretary of Agriculture announced the appointment of a committee of three men to develop plans to improve, in such a way as to increase production of waterfowl and other wild life, some of the lands retired from unprofitable crop production. The committee included: Thomas H. Beck, Chairman, editorial director of *Collier's* and head of the Connecticut State Board of Fisheries and Game; J. N. Darling, famous newspaper cartoonist, and prominent in game protection work in Iowa; and Aldo Leopold, of the University of Wisconsin at Madison, well-known for his studies of the ecological requirements of game species.

Owing to pressure of other duties, it is understood that Mr. Leopold was unable to attend more than a few of the meetings of the committee. On February 8, after about a month of intensive work, the committee issued a report in mimeographed form, and this, about February 23, appeared as a printed document, "Report of the President's Committee on Wild Life Restoration." Among its more interesting high lights should be mentioned its general tone of optimism as expressed in millions of acres and of dollars, and the extraordinary benefits that were almost immediately expected to accrue.

To many whose experience had made them painfully aware of the delays inherent in the acquisition of large blocks of land, and the unlikelihood of many millions being handed over for the exclusive benefit of wild life, the cheerful predictions were received with more than a grain of salt—when it rains it pours, you know.

Other features that seemed even more ominous were the entire lack of any mention of shooting as a factor in depletion, unless it be hidden away between the lines in this paragraph:

"Natural propagation has been curtailed to such an extent that no amount of further restriction of the take or methods of taking will suffice to restore waterfowl." And the further fact that no mention is made of any waterfowl being produced anywhere but in the United States. Since it has been a matter of common knowledge for half a century that an overwhelming majority of the waterfowl that the gunners of the United States pursue each year comes from Canada, it seemed that the fact deserved to be mentioned, at least. Well, we may come back to this subject later.

BRANT'S PLEA FOR WATERFOWL. While this committee had been sitting, a 14-page pamphlet, "A Last Plea for Waterfowl," was distributed by the Emergency Conservation Committee of New York. Its author is Irving Brant, a well-known newspaper man who for some years has worked for wild life protection. Whatever were the ideas of the President's Committee in ignoring the gun as a factor in wild life depletion, they were not shared by Mr. Brant. He pointed out that the Biological Survey

had cited over-shooting as one of the primary causes of waterfowl shortage on northern breeding grounds, while More Game Birds Foundation, "representing the shooting desires of Joseph P. Knapp of *Collier's*" and others, thought it might be due to the ducks' preference for alkaline conditions. Further we quote: "This is no time," says More Game Birds Foundation, "to experiment with substitutes or to squabble about petty, unpopular, and unenforceable shooting restrictions presumed to provide the remedy." May we call attention to the only reference to shooting in the Beck Committee report, quoted in a previous paragraph, and suggest a possible similarity in trend of thought. Mr. Brant also pays his respects to baiting (including some light on the famous hearing of August 28, 1933); and the Advisory Board to the Secretary of Agriculture, citing as conservationists T. G. Pearson, Lee Miles, J. N. Darling and Sam Anderson; well, we could nominate a few others who might not be so bad if they were in better company, but there are also about a dozen and a half, of whom the least said, the better. He also dealt, though a little more gently, with the Izaak Walton League, the American Game Association, and the Duck Stamp. Mr. Brant divides the conservationists into two groups: those who wish to reduce the kill, build up the breeding stock, and preserve it by a coordination of sanctuaries and hunting regulations; and those who advocate keeping up the slaughter while building up a sanctuary system.

And right now the American Nature Association is wondering which of these two groups is in line to get the upper hand this year.

Darling appointed Chief of Biological Survey. Shortly after the publication of the report of the President's Committee, J. N. Darling was made Chief of the Biological Survey, and at once set about the work of establishing refuges. Already well and favorably known, he has increased his popularity. He has also learned much about the difficulty of doing things fast in a world where all the loose millions of "easy money" are being hotly pursued by those who desire them for other purposes than the mere protection of helpless wild things. One of his latest public utterances compared the process of getting funds for wild life to sucking sustenance from a barrel with a straw. We suspect that the political value of wild life protection is overshadowed by that of wild life destruction.

The Duck Stamp. The advocates of the Federal one-dollar license, who for years had urged the passage of some measure that would settle the waterfowl problem by the acquisition of refuges, were finally successful in passing a law requiring that a special stamp, costing one dollar, be affixed to each waterfowl-hunting license.

We have never believed that this kind of a law would prove a true conservation measure. We have always feared that such a law would be used as a weapon to stifle proposed restrictions, and we are not yet convinced that we are wrong. While the bill was being considered, the hunters were exhorted to get behind it, "so the duck shooters of this country can demand their rights." Well, evidently they did. The latest bit of evidence that has come to our attention is the following, published by the Game Warden of a large eastern waterfowl state: "Had it not been for the enactment of the law requiring the Federal Duck Stamp, I fully believe that the sportsmen of this country would have been penalized with a closed season on waterfowl." Need we say more?

The waterfowl season. Intensive investigations by the Biological Survey on the breeding grounds of the west and northwest, and in Canada as far north as latitude 58 degrees, revealed drought conditions so severe in western United States and southern Canada that waterfowl nesting was almost eliminated, and the great breeding grounds north of the drought area, where conditions remain ideal, was scarcely one-tenth occupied. Yet with the waterfowl in so alarming a condition, they were faced with a shooting season of 30 days strung out over a three-and-a-half months' period by rest days, and with baiting allowed under permit. Sentiment for closing the season was strong in some states, and was backed by several national organizations, but pressure from influential sources, and the fear of losing revenue from the Duck Stamp, caused the total collapse of the movement.

Hornaday's "The Wild Ducks' Waterloo." In September, Dr. W. T. Hornaday, of the Permanent Wild Life Protection Fund, issued a 24-page pamphlet entitled "The Wild Ducks' Waterloo." He pictured graphically the appalling condition of the waterfowl, due to unprecedented drought conditions following a progressive decline from over-shooting and other causes, and the terrible havoc that would be wrought if the dangerous condition that in justice demanded a closed season should instead be met by a continuation of the same destructive practices that were responsible for it. But the season had been proclaimed, and it was not changed.

Bell and Preble on breeding ranges and shooting. In October a small pamphlet, Department of Agriculture Misc. Publication No. 210, "Status of Waterfowl in 1934," by W. B. Bell and E. A. Preble of the Biological Survey, was issued. It presented in tabular form the results of inquiries sent to the Department by more than a thousand experienced observers from all over the United States and southern Canada, reflecting the status of waterfowl compared with that of the previous year. It showed that about 85% of North America's waterfowl, most of which are shot in the United States, are raised in Canada and Alaska, and mainly north of the drought-stricken area, and that these areas, still favorable for breeding, are very inadequately occupied.

A set of maps that outline the breeding grounds of 24 species of important geese and ducks, and also the areas over which shooting for sport is practiced, is an important feature of the report. These maps, which were prepared by Mr. Preble in the previous spring, and were then distributed widely in mimeographed form, are modified in the publication by having the drought areas, where nesting is now virtually eliminated, superimposed on the birds' natural nesting ranges.

Salyer on waterfowl restoration. In October

there also appeared a small pamphlet, "A Program of Waterfowl Restoration," by J. C. Salyer of the Biological Survey. This publication describes the prolific nesting grounds of former years in our northern prairie states, and their gradual decline from settlement and drainage. The measures that are now being undertaken to restore as many as possible of the breeding grounds in this dried up section are referred to.

DUCK CONDITIONS IN CANADA, 1934. In October Hoyes Lloyd, Supervisor of Wild Life Protection in Canada, distributed a mimeographed report on the conditions affecting waterfowl on the Canadian breeding grounds up to September, 1934. Maps and graphs that accompany the text show the dangerous state of most of the prairie-nesting species. He points out that such conditions are of greater concern in the United States than in Canada, since "in the United States its influence is felt from the Atlantic to the Pacific," a delicate allusion to the fact that the bulk of Canada-raised birds meet their end south of the Canadian line. He concludes: "It is doubtful if the hunters can continue drawing upon the diminishing duck supply at anything like the present rate, as this spells the extermination of some kinds, and grave depletion of others." In a later report, read at the Game Conference in New York in late January, he reported a general decline in most important species of the Prairie Provinces, and an alarming shortage in several eastern species.

WHENCE COME OUR DUCKS? "The Waterfowl Flyways of North America" by Frederick C. Lincoln of the Biological Survey (being circular No. 342 of the Department of Agriculture) points out the conservation significance of flyways. This is the term used to designate the four major migration paths that the waterfowl follow. These flyways are separately illustrated on maps of North America, and even a hasty scrutiny serves to show to the bird student, or the gunner, to what part of the continent he is indebted for the birds that come to his field glass, or gun, as his tastes and training dictate. If he is interested in species, as even the gunner has to be, lest he run afoul of the law, he will be aided also by the bulletin by Bell and Preble, before cited, which shows the breeding ranges of the more important species, and of which the present may be considered as a companion publication.

The gunner, we hope, will learn from these two bulletins how much he owes Canada and Alaska for his sport, and it is high time he found this out.

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GOSHAWKS AND BOUNTIES

In *Pennsylvania Game News* for January, 1935, we find this statement: "When the sportsman learns, for instance, that actual observation has found a pair of goshawks bringing an average of a grouse every two hours to their young—besides what the parents themselves eat (away from the nest, of course)—he is not likely to grudge the few cents of his license fee to reward the man who disposes of one of these killers."

We wonder on what evidence this statement of grouse killing is made. We have not seen it, but, of course, we do not say that such an observation has not been made somewhere. But we do think that this statement will lead the Pennsylvania sportsman to conclude—and we fear that the writer of the statement meant for him to do so—that every goshawk shot in Pennsylvania is in the habit of bringing (with his mate) a ruffed grouse to the nest every two hours during the several weeks that the young are being cared for. Even if this were so, it would mean little, for only a very few goshawks breed in Pennsylvania. But as a matter of fact goshawks prey on many other things than grouse. And, further, most of Pennsylvania's goshawks are raised to the northward, and most of these beyond the limit of ruffed grouse abundance, or even occurrence.

The bad feature of Pennsylvania goshawk bounty lies not in the number of goshawks that are killed, but in the vastly greater number of other hawks, many of which are harmless, or even beneficial, and some of which are protected by law. And we are sorry to note the attitude of mind that permits the employment of such a method of argument as is evident in the statement quoted.

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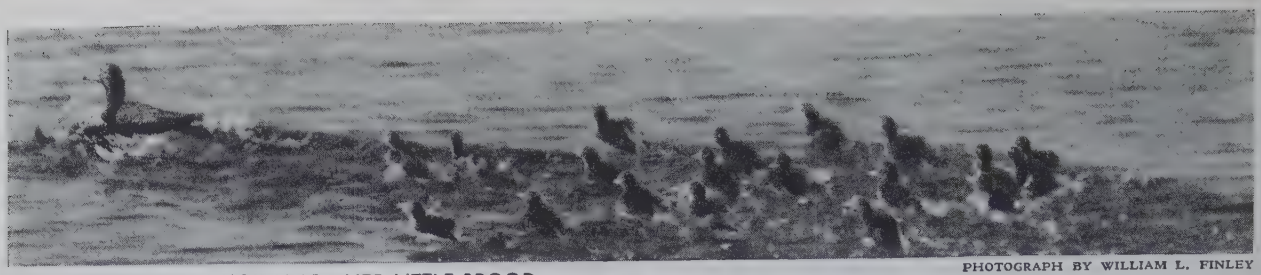
PRESIDENT WITHDRAWS PUBLIC DOMAIN

The entire 165,695,000 acres of public domain have been withdrawn from settlement, location, sale or entry of any kind by order of the President in preparation for a nation-wide conservation program.

This withdrawal, in the words of the President, "is pending determination of the most useful purposes for which they may be put in furtherance of the land program and conservation and development of natural resources." This land, not suitable to the profitable growing of crops, is destined for the conservation and development of forests, soil and other resources, the creation of grazing districts, and the establishment of game preserves and bird refuges.

It is the hope of all who have the welfare of conservation at heart that this withdrawal means the first definite step in a plan for wise protection and development of the millions of acres which, like red-headed stepchildren of Government, have been allowed to run wild and shift for themselves through many years of tragic neglect.



PHOTOGRAPH BY WILLIAM L. FINLEY

MOTHER REDHEAD DUCK LEADS HER LITTLE BROOD

This species, heavily overshot and particularly hard hit by drought conditions in its breeding ground, is in danger

Outlook for Waterfowl

IN THE New York Conservationist for February 1935, W. T. Hornaday reviews the waterfowl season of 1934 under the title "The Worst Outlook for Waterfowl." He calls it "the worst deal ever given the waterfowl of any civilized nation as thus far recorded in profane history," basing this definition in part on the condition in which the birds found themselves because of a long series of years of cruel persecution from man, and from drought. We quote:

"First, from 1913 to 1923 there was a ten-year period of cumulative and frightful wildfowl slaughter in the United States; then seven years of hard fighting to make '50 per cent. less killing,' which ended in a big victory for bag-limit reductions on ducks and geese. But as a backlash, in 1930 there set in throughout the West-central prairie Provinces of Canada and our North-central States, a severe and far-flung drought. Very soon it covered about 18 of our States, and it lasted five years!

"That drought hit the highly concentrated breeding-grounds of Canada a smashing blow. It was worst in 1931 and 1934, and its total destruction of game, domestic stock, and game-food crops was absolutely unprecedented. The waterfowl breeding grounds of the United States always were so small that those in the drought area just vanished.

"But the hardy American duck-hunters seem to have little compassion. Despite the slaughter by the drought and the terrible decreases reported and not disputed, in 1934 those relentless hunters went out after the ducks, just as usual, armed chiefly with automatic and 'pump' repeating choke-bore shotguns, and high-power cartridges. They also went out to decoy with grain, and with live-bird-decoy ducks and geese (calling for 'help'), to assassinate drought-stricken and famishing waterfowl, and to hire for '$10.00 per daily bag-limit' the privilege of murdering hungry ducks at gun-ranges so short 'it is impossible to miss!'

"And so, in the lamentable three and one-half months of a season of 'open shooting' in 1934, up to December 14, 1934, those hard-boiled 'duck-stamp' hunters to a total of 548,673 took out hunting licenses as usual, and joyously went out to find and to kill the survivors of that most terrible drought. Were they mentally unable to distinguish right from wrong? If so, why were the foulest killing methods ever concentrated on starving waterfowl acceptable to them? Although the Biological Survey publicly appealed to all stamp duck-hunters to shoot ducks as gently as possible, we have yet to hear of any masses of duck hunters who manifested compassion for distressed ducks, and voluntarily refrained from hunting, save in solitary Utah.

"And all throughout the last nine months, the evidence of duck devastation, and 'decreases,' and 'scarcity' has been piling up from American and Canadian sources. Mr. Darling said on January 22, 1934, 'consternation seized the sportsmen in many broad areas.' And 'that consternation is justified.' Now in view of all that, why this third jamboree in counting the ducks and geese 'from Long Island to Yucatan?' Campaigns in State Legislatures now in session for valuable State support should have begun on January 1st, instead of being permitted to go by default.

"And now has come, and gone again, the great annual stalling exhibition of the United States. At the biggest-of-all Conservation Conferences, of January 21 to 23, Mr. John H. Baker, for the National Audubon Association, cruelly broke in with a resolution demanding a year of 'no shooting' in 1935. For the first time in its 21 years, there was a discussion of the too-much shooting idea! Even Mr. Darling admitted that 'now the only controllable element affecting the duck population is the annual kill by the guns of sportsmen;' but at the same time he is going to count the ducks, and is 'not going to be rushed into any conclusion.'

"Well, there are some conclusions that need no rushing. God knows that the fool duck-hunters of the United States, and the 'hysterical' conservationists also, have been just 15 years in coming to a duck-decrease conclusion that was perfectly apparent in 1920, when some mighty good Federal and State 'programs' were printed and published."

Mr. Hornaday thinks that it is hopeless to expect a cessation of shooting for even one year, not to mention two or three years, (which would be necessary to bring them back to reasonable degree of abundance) "because of the influence exerted high up to keep the guns a-going as is". We must admit that prospects look pretty dark when William T. Hornaday gets so discouraged, but we urge our readers, if they wish to keep our waterfowl with us, to work for a series of closed seasons.

POISONING PREDATORY ANIMALS

COYOTE, OBJECT OF POISON CAMPAIGNS
A wily fellow, the drive to exterminate him seems to have changed his habits of life

PREDATORY wild animals, both mammals and birds, have become a problem to conservationists solely because of the unbalance of Nature created by man's civilization. There is no use denying that a predatory animal problem exists, and it is a mistake to take the extreme attitude that the permanent cure is to let Nature restore its own balance. He who takes such an attitude overlooks the plain fact that the conditions of civilization result in man's stealing the natural range of wild animals for his civilized purposes. Civilization makes it impossible for wild animals to move freely from one place to another to escape their natural enemies, and man must, therefore, recognize that there is some obligation to endeavor to restore some sort of balance, even by artificial means.

All this does not mean that we must go predator-mad and overdo so-called control. There are many phases of the present situation that the majority of conservationists find hard to swallow. There is something in the human mind that reacts against unnecessary crudeness and cruelty. It may be that we have to put even human beings out of the way when they are a menace to society, but we choose the most humane methods possible. We also endeavor to choose such methods as will harm only those individuals directly responsible. For this reason, the American Nature Association has always taken a stand against the use of poison in the control of predatory animals.

Practical-minded stockmen of the West, and practical-minded Game Commissioners of states that derive revenue from wild game, confront the predator problem and decide that they must attack it by whatever means come to hand. Such people have demanded and secured the dedication of public relief and public works funds to additional projects for poisoning certain forms of wild life. They have urged the use of poison for two reasons —first, because they realize that it takes skill to destroy predators by means other than poison, and that such skill is not available or is too expensive. The other argument is that poison is believed to produce greater results in terms of death of supposedly undesirable wild creatures. Here again we are confronted with the lack of scientific knowledge and an impatient unwillingness to face the facts.

The Bureau of Biological Survey of the United States Department of Agriculture has been under constant attack from various groups because this is the agency through which the Federal Government has gone into the business of the destruction of wild life by poison. Lined up in this attack upon the United States Biological Survey are some strangely assorted groups. Some, with the highest idealism, are fighting blindly according to the dictates of an honest conscience. Others are fighting for a particular purpose or a particular interest which affects them. In all this there has been little or no *impartial* scientific study of the problem. The Biological Survey in its predatory animal activities works something like the Federal Bureau of Public Roads. It takes money appropriated by the several states where the predatory problem is severe, matches it with an equal amount of Federal money, and, with that total, carries on the work. These men in the Biological Survey, who have been actively in touch with the situation for years, seem to possess the thoroughly ingrained belief that poison is the only way that they can kill enough predators to maintain the necessary artificial balance of Nature, without spending more money than the combined state and Federal totals. So they answer every attack of conservationists with rows of figures and statistics to bear out their contentions that what they are doing is necessary, inevitable, and incapable of being unwisely handled. Venomous epithets are hurled back and forth. Those opposed to the use of poison are recruiting their numbers from year to year, but because of the system of local government within the most affected regions, the anti-poisoners have made little headway.

From time to time the question has been brought up at the annual meetings of the American Game Conference in New York. The topic was, indeed, on the preliminary program for the meeting of January, 1935, but, for some reason or other, it was left off the final program—probably because the government bureaus and some of the game interests themselves felt that in the waterfowl situation they had enough to quarrel about.

Meanwhile, in that supposed hot-bed of predators and

anti-predator sentiment, the great Southwest, there has arisen for the first time a constructive attack from the scientific and practical viewpoint. The Southwestern Conservation League, with headquarters in New Mexico, with the cooperation of the American Nature Association, is endeavoring to work out a practical study and test. Even the stockmen who claim to be among the most seriously injured parties, and the New Mexico Game Commission, which carries a strong anti-predator bias, are wondering about this poison business and would like to find some practical means of meeting their problems without poison. In the Southwest the Biological Survey has for some years been carrying on its anti-predator activities, using poisons developed by the Survey and applying them according to methods which they claim to be harmless to animals other than those sought to be poisoned. Not only is this claim open to serious question, but, also, the results have been far from satisfactory. The testimony as to the effectiveness and destructiveness of poison varies according to the individual making the report. There are those who believe that the coyote of the present day is far more destructive and far more of a killer of other wild life and livestock than he used to be, largely because generations of poisoning have brought about a gradual evolution in the coyote himself. Taught by the use of poison to shun carrion and dead baits, he has become a killer of animals, such as he never was before. This is presumed to be due not merely to the actual use of poison on baits set for coyotes, but, also, to the destruction of the small rodents on which the coyote formerly lived quite largely. Made ill from the second-hand poison obtained from eating poison-killed or poison-weakened rodents, the coyote concentrates less on rodents and more upon deer. This is a theory; it is not given as a scientifically proved fact.

In New Mexico it is now proposed that the various interests shall sit down together and select a large mountainous area in the State, wherein the use of poison will not only be forbidden by cooperative agreement between the Biological Survey and the other parties, but where the private use of poison will be discouraged by the cooperative efforts of all the various groups. The project would be supervised in the field by a special agent of the Southwestern Conservation League. The employ of this agent for the study of the predatory problem has already been made possible by a grant to the Southwestern Conservation League from the Charles Lathrop Pack Forestry Foundation. The present costs of predator control by poisoning methods are known. Over a period of two years or more, a careful study will be made of other methods of predator control, to the degree that may be actually necessary to determine what, if any, difference there is in cost, and whether a satisfactory degree of control can be evolved. At the same time, a careful check will be kept upon the so-called predators within the area, and upon the reactions of persons living therein and hunters who are accustomed to blame their failure to get game upon the destruction of game by predators. In the end, it is hoped that there will be available some actual data on this whole controversy, which has hitherto been so unburdened by facts. The findings will be promulgated as widely as possible. It is believed by conservationists that this scientific approach by test projects will eventually offer some practical termination of the bitter controversy. It is significant to note that the United States Biological Survey has agreed to refrain from the use of poison in the area designated.

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In a resolution adopted by the Wisconsin Federation of Women's Clubs on the initiative of the Conservation Division of that organization, the Federation has gone on record in favor of a closed season on migratory waterfowl, and for a voluntary closed season by the Lake States if the Federal Government fails in its responsibility and does not close the season.

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Still refusing to recognize the strong public resentment against them, the billboard interests have filed bills in the California Legislature to repeal the State billboard law, or, failing this, to vitiate it by reducing funds available for enforcement and otherwise nullifying the Act.

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Competition may be the life of trade but it may well be a further complicating factor for wildlife. Following a "pest hunt" in Ohio conducted by the Peninsula Resort Association, it was decided to hold a competitive "pest hunt" with the Port Clinton Rifle Club.

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Comprising 64,717 acres, the famous P-Ranch in Harney County, Oregon, has been acquired by the United States Biological Survey and will henceforth be known as the Blitzen River Migratory Bird Refuge. This area will also be important in insuring a water supply for the Lake Malheur Bird Refuge, which adjoins it on the north.

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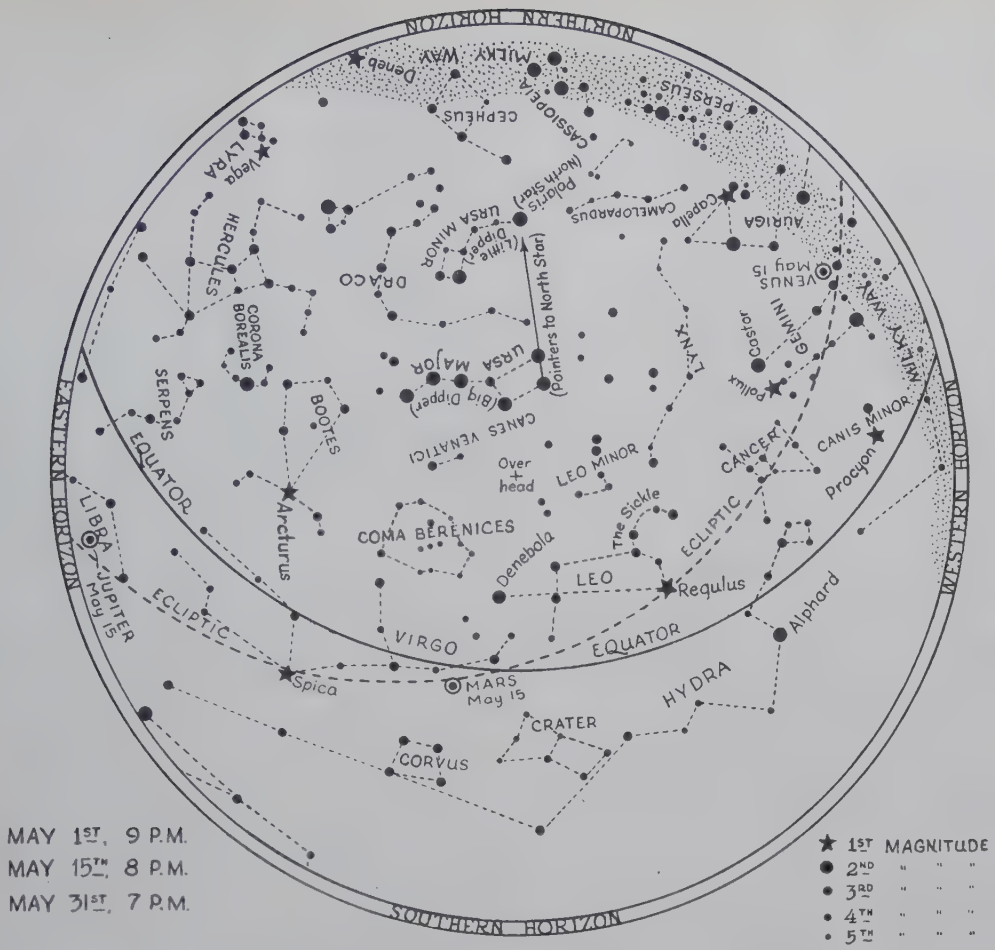
"Restoration of environment" is the current red herring being dragged across the path to divert further and essential restriction on shooting. Such restoration is important and the American Game Association contends that it is the answer. It urges us to learn basic facts of environment and put them into effect. That takes time and, in the meantime, shooting goes on; stocks are lessening. Mr. Darling says the only controllable element is the gun of the hunter. By all means let's restore environment, and learn the basic facts, but let's be honest and leave something to restore to the restored environment.

▪

Enter under Americana. Matt Kimes, life prisoner in Oklahoma for the killing of two officers, is given a few days off during the hunting season, that he may enjoy his favorite sport. We have seen no pictures of him while actually hunting, but only while branding cattle. More than rumor has it that this respite from the irksomeness of confinement is an annual affair. The British are a sport-loving race, but as far as we have learned, they do not carry the matter to the point of turning life prisoners loose with a gun.



To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

Venus Hides Behind the Moon

Occultation to take place the fifth of May

By ISABEL M. LEWIS

A BEAUTIFUL and interesting celestial event will take place on the evening of May 5 when Venus, the most brilliant of all the planets, will disappear behind the moon at or near the time of sunset. This heavenly coyness will take about an hour, at the most. The time and duration of the occultation, as it is known, will vary with the location of the observer. It will be visible in the eastern, mid-Atlantic, and most of the southern and central states, but will not be observable in the western part of the country.

In Washington, D. C., and vicinity, the disappearance of the planet behind the moon, or its immersion, as it is called, will occur at approximately 7:08 P. M., Eastern Standard Time, about five minutes after sunset, when moon and planet will be high in the western evening sky, and the reappearance of the planet from behind the moon, or its emersion, will take place at about 7:59 P. M. These times will hold within a very few minutes for all places within two hundred miles or so of Washington. In New York City and vicinity the disappearance of the planet behind the moon will occur at about 7:00 P. M., E. S. T., a few minutes after sunset, and the time will not vary more than three or four minutes throughout New England. The reappearance of the planet will occur in the same sections at about 8:00 P. M. In western New York the occultation will begin and end about two minutes earlier than in New York City. In the central states the occultation will be shorter in duration, lasting less than half an hour in the vicinity of St. Louis, where Venus will disappear behind the moon about 6:10 P. M., C. S. T., and emerge about 6:35 P. M., while the sun is still above the horizon. As the times differ considerably in different sections it is not possible to tell more exactly here when one may expect to see the planet disappear and reappear in all localities.

Although the planet will not disappear from view be-

hind the moon in the western states there will be a close approach of the planet to the moon in the late afternoon. As Venus is so bright that it can be seen easily with the naked eye in broad daylight, one should have no difficulty in observing this close approach or the occultation, even if the sun is still above the horizon. One will find it a great advantage in observing the occultation to have a pair of binoculars, or, of course, still better, a small telescope. At the time of the occultation the moon will be more than three days old and in the crescent phase, and Venus, which also has phases, because its orbit lies within that of the earth, will be gibbous at that time. The disappearance of the planet will take place at the dark limb of the moon and the reappearance will be at the bright limb. Even if one does not know in advance the exact instant when the planet is due to disappear, it will be possible to estimate about when it will take place as the planet will be seen gradually to draw closer to the moon until it actually appears to come in contact with it and then disappears. With the aid of binoculars one should be able to note the exact moment of disappearance, but the reappearance is more difficult to observe. It will occur at the bright limb of the moon, and so will not be noted so readily. Also one does not know in advance at exactly what point on the limb to expect it to reappear unless an exact computation has been made in advance and one has the aid of a telescope. However, if one is fortunate, the planet may be caught at the instant of its emersion from behind the disk of the moon.

An occultation of a star, especially the immersion, usually takes place with startling suddenness. This is not so in the case of a planet, which has an appreciable disk. The planet will be seen to remain in contact with the moon's disk for an appreciable moment before disappearing and the odd appearance of the brilliant planet in contact with the disk of the moon, which may be faintly visible because of "earthshine" beyond the crescent, will present a spectacle that is seen only on rare occasions.

In its path through the heavens the moon is continually passing between us and the stars beyond it and temporarily hiding or "occulting" them. Hundreds of these occultations occur every year and observations of as many as possible are made by astronomers all over the world. They are of great value since they furnish the means of checking the calculated position of the moon, obtained from tables, with its true position, and also the positions of the stars taken from the various star-catalogs. As a rule several occultations of planets by the moon occur every year, but, like a total eclipse of the sun, they are not of frequent occurrence in any one locality. However, the chances of seeing an occultation of a bright planet are better than the chances of seeing a total solar eclipse because an occultation is visible over a much greater area of the earth's surface than a total eclipse of the sun.

On December 20, 1933, both of the planets Venus and Saturn were occulted by the moon within an interval of two hours. Although not observable in this part of the world, the two occultations were observed in Japan by many people and described as a most beautiful and remarkable spectacle. Even when occultations of planets or first magnitude stars by the moon do occur, they are not always observable under favorable conditions. There is also to be an occultation of the first magnitude star Antares on May 19, visible in all parts of the United States, but this occurs a day after full moon, not a favorable time for observation, and, in the eastern and central states, around two or three o'clock in the morning. In southern California this occultation will occur on the late evening of May 18, the immersion occurring at Los Angeles at 10:59 P. M., and the emersion at 11:56 P. M., approximately.

The occultation of Venus this month is of unusual interest because of the fact that it is an occultation of the most brilliant of all the planets, and also because it occurs at the best phase of the moon and the best time of day for observation in a thickly populated part of the country. The last occultation of Venus visible in the same parts of the United States occurred on the morning of January 13, 1923. The immersion occurred shortly before, and the emersion some time after, sunrise. It was observed generally throughout the eastern and southeastern and central states, a number of fine photographs of the crescent moon and crescent planet being taken with the aid of telescopes. The last occultation of Venus visible before this date at Washington, D. C., occurred on February 29, 1884, about two hours after sunrise, although in 1889 three occultations of Jupiter and one of Mercury were visible at Washington, and occultations of Mars and Saturn have occurred at rare intervals, as well as other occultations of Mercury and Jupiter and also Uranus and Neptune.

May is a fine time of year to observe the Big Dipper in the evening hours. It is then near the meridian and high above the pole. The two largest constellations, Hydra and Virgo, are also seen at their best this month. Hydra stretches almost completely across the southern sky below Cancer, Leo and Virgo. Corvus, The Crow, one of the riders of Hydra, lies about forty degrees due north of the Southern Cross and is about equal to it in size.

Mercury reaches its greatest elongation east of the sun on May 26. It should be easily visible in the evening twilight about this time.

Mars is now in Virgo a few degrees northwest of Spica, and, although it is now decreasing in brightness, it is still, after Venus and Jupiter, the brightest object in view in these latitudes. Its reddish color forms a beautiful contrast to the bluish-white Spica, which is not far distant from it and to the orange-hued Arcturus, in Bootes, to the northeast.

Jupiter also is in the evening sky this month in Libra, which lies next to Virgo on the east. On May 9 it is in opposition to the sun and rises at sunset. It is at its maximum brilliancy. Saturn is now visible in the morning sky, rising about three hours before the sun in Aquarius.

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Trailside Treasures

OWLS, COWS and LIONS

By
JANE ADAMS PARKER

"WELL," Grandpa Arnold smiled down at the three children, "the last bulletin from Trailside Treasure House says the baby owls are doing fine."

"Wasn't it funny?" Jo laughed. "We were just wishing we had another girl for the other suit and out popped Rosy Posy."

"And I thought I'd stayed in that closet forever, before your Grandpa tapped his foot for me to come out," said Rosy.

"Then we heard that funny noise and the flickers making such a fuss," went on Jerry. "So we all ran out, and there was the poor baby owl fallen out of its nest."

"Then Grandpa got a ladder and climbed up. And there was another baby owl in the flickers' nest," said Jo. "He must have been terribly scared when Grandpa's hand reached in and got him."

"And that poor mother owl we found lying in the woods where some one had shot her," said Rosy, sadly.

"Even the smallest air rifle can do a great deal of harm in our dear old woods," said Grandpa Arnold. "Once we found an injured great horned owl, and took him home to doctor. At first he used to hiss terribly at us when we'd come near his cage, and stare at us with his big black and yellow eyes. But after a while he'd let us scratch his ears, and sat quite still dropping his third eye-lid down over one eye, while he gleamed at us with the other."

"Aunt Dot said the little screech owls eat birds sometimes. And they roll up the parts they don't like and spit them out in a ball."

"Yes," said Grandpa, "you can about tell what an owl has had for its supper by the pellets it spits out. Now here comes your captain. Have a good time, and bring back some fine treasure."

"They will," said Aunt Dot, "because they've all brought their 'Seeing Eye'."

With a wild dash the children went tearing down the trail. After a while they reached a great tree that had fallen across the path, and they sat down to look around.

"Let's see how many birds we know now," said Aunt Dot. "There's robin and downy woodpecker—"

"And wren and chickadee," went on Jo.

Then in turn they all told what birds they had learned in their treasure hunts.

"Let's draw a picture of our trail," said Jerry, "and put in the trees we've learned—"

"We could draw or paint the wild flowers," said Jo. "And put them in just where we found them—"

"I know something else," said Rosy. "Make some markers and mark things, like poison ivy. So others will know it. Why—what're those ants carrying?" She ran over to a little cleared sandy space and pointed to a long line of ant workers, carrying something in their jaws.

"Rosy certainly has the 'Seeing Eye'," said Aunt Dot.

Out came the magnifying glasses as they all dropped to their knees.

"Those are the aphid cows, from eggs kept down in the ant burrows all winter, most likely,"

said Aunt Dot. "Now they're bringing them out to put back on the plants they gathered the eggs from last fall."

"Cows!" exclaimed all three children together.

"Yes indeedie," said Aunt Dot. "Ants stroke the plant lice, or aphids, with their feelers and get what we call honey dew."

"There's an ant slipping down that funny hole," said Jo.

"That's an ant lion's burrow," said Aunt Dot. "He waits down at the bottom of that funnel-shaped hole until some little ant slips in. Then he throws sand about her, so she can't climb. And out come his strong pinchers and grab her for dinner."

"Ants' cows and lions," laughed Jo. "Maybe next we'll find some tigers."

Jerry had run over to Willow Stream, and was watching something intently. Suddenly he called, "What's that stuff floating on the water, Aunt Dot?"

"My, my, Jerry's 'Seeing Eye,' has spied our treasure for today," exclaimed his aunt. "I'm not going to tell you what it is just now. But we'll scoop some up and take them home. When they hatch out you'll see, well—something."

What do you suppose Jerry's queer treasure was?

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Noises In the Bush

By ROBERT J. DOWLING

OF COURSE you've all heard about the Jersey Devil. What a weird creature he must have been! Some folks gave him the general shape of a bird, but with four legs instead of two. Others said that he had the body of a dog and could bark. Some said this monster was an ape covered with feathers and having big, owl like eyes. There were still other stories that he had the head of a human and could talk or that he was capable of tearing anyone to pieces and eating them.

We were away up in the country on our vacation while all these wild tales were being sent around by the newspapers. So when we heard queer noises coming from the bushes and not quite knowing what else to lay them to, we decided that it must have been the Jersey Devil come to haunt us.

We heard this noise pretty much all summer long, it seemed most prominent just after a rain or in the evening. We looked high and low, day and night, but we could not discover just where it came from. We would hear it pouring out of a bush and all dash over to see if we could bring this strange what-ever-it-might-be out by beating the leaves. In the next second it would sound from another bush away across the other end of the yard. It was not likely that this mysterious creature was a bird or an insect, else we would have seen it flying. But now we were sure that there were at least two of them, or that one had some way of getting around in spirit.

In the meantime we took a tramp up in the woods and captured some spring peepers. They gave us much fun and amusement watching them go after the flies that we would put in the big jar with them. Once in a while we would move the cover and let these funny little frogs come out and catch their own dinner. Indeed we got to like this sport so that when the time came for our vacation to close we brought our tiny playmates back to our home in the city.

It was rather a task, we found, trying to keep their appetites satisfied through the winter and to our sorrow we lost a couple of them. Their jar was kept in the study right over my desk and one fine spring day as I was sitting writing something happened—something of such importance that I put it in my diary. Everything was quiet save for the tick, tick of my typewriter, when suddenly I heard a loud P-e-e-p, p-e-e-p and recognized it at once as

the song of the Jersey Devil. I looked around me, my heart beating fast. I listened again, and again it sounded, only this time it seemed to be coming from the peeper bowl. I jumped up and with my nose almost in the jar beheld one of our little friends sitting on the twig, his throat puffed out and rosy as he peeped on merrily. Now the great mystery was solved. It would take more than a p-e-e-p, p-e-e-p to send us jumping about next summer. It took us six months to find out who caused the noises in the bushes, but we shall never forget the spring peeper. And to this day I do not see how such a tiny little mite can make such a big loud noise.

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The Charioteer, The Goat and the Two Kids

By JEAN H. BROWN

The Charioteer—thus the story of old,
Rode in furious haste,
In a chariot of gold,
Through clouds of star-dust,
Nor stopped on the way,
Till he came to the field,
Where the mother goat lay
With her two little kids,
Both trembling with fear,
When they saw that the terrible Bull was near.

But the Charioteer knew just what to do,
He picked up the kids,
And the mother goat too;
Upon his broad shoulder,
And on his strong arm,
He placed them in safety,
Beyond reach of harm.

Capella, the goat,
Is a favorable sign,
To seamen afloat,
On the deep rolling brine.

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Just Suppose

By GLADYS JONES HOLLINGER

S'pose the Kingbird now wore a crown on his head,
And Chuck-Will shed tears for his widow stone dead,
And Kingfishers ruled all the good fisher folk,
And the Catbird had kittens for an April Fool joke.

S'pose the Water Thrush swam about like a fish,
And the Nuthatches hatched from the nuts in a dish,
And the Oven Bird cooked in a kitchen so neat
The tough steak the Butcher Bird sold her for meat.
S'pose the Wood Pewee's feathers were of cedar or pine,
And Poor Will was punished like your son or mine,
And Cow Bird gave milk to help Mag make her pie,
And bold English Sparrow used a glass in his eye.

S'pose Snowflakes came tumbling to earth in great drifts,
And Owls from the cold country used handkerchiefs.
And Vesper Sparrows an anthem could handle,
And we melted a Waxwing o'er the blaze of a candle.

S'pose Humming-birds hummed crooning tunes "on the air,"
And all Cuckoo Birds told time by the pair,
And a Rock-Wren fell in the sea and did sink,
Tell me, could Brewer Bird brew a Swallow to drink?

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Hiking and Camping Forum

Conducted by
Ernest A. Dench

Inquiries on hiking and camping will be gladly answered by mail if a stamped addressed envelope is enclosed. Address the Forum Editor.

Brevities

Seventh annual Appalachian Trail Conference is changed to June 22-23 at Skylands, Va. Delegates will be in the midst of the proposed Shenandoah National Park, decidedly preferable to a big city locale. . . . When a hiker neglects his home garden at this season you know he has the trail clearing fever. Yes, come and inspect the Forum Editor's wonderful weed crop! . . . "Only a Half a Mile More" is the trail slogan of the University of Colorado Hiking Club. The novice is concerned with how many half miles there are altogether. A hardy bunch, these Boulderites, defying the weather man to do his worst. . . . On a camping trip your pants pockets are handy for small odds and ends crowded out of your pack. To conserve weight and space change your money beforehand. Convert pennies into silver, silver into bills, and ones into fives. . . . Forum Editor wonders whether it was humorous intent or a typing error when an envelope came addressed to him as *Hicking* Editor. . . . The Chemeketans (Salem, Ore.) will shortly have the unique experience of crossing an unfrozen lake on foot. How come? The surface of Moss Lake is all the name implies. Nature's matting is sufficiently strong to withstand the pressure of husky hikers. . . . "Hikineers" is offered as an abbreviation of hikers and mountaineers by Editor Rita May Baker of the Mountain Club of Maryland. . . . Guests from 44 states and 13 foreign countries were among the 8000 served last year at the Long Trail Lodge of the Green Mountain Club. It also increased its membership from 1084 to 1204, spread among ten chapters. After four years at helm of New York Chapter, William Burton steps aside in favor of Walter S. Atwood. . . . Rebecca Cushman, in the spotlight because of her book of Southern folklore poems, *Swing Your Mountain Girl,* recently gave a reading at an indoor meeting of the Carolina Mountain Club. . . . Selected photographs shot on recent hikes are grouped in a supplement stapled to *The Echo,* mimeographed vehicle of the New York Mountain Club. Process is too involved to explain here, but Editor Elizabeth M. Staats will gladly enlighten those interested. . . . A lot was accomplished on the annual Appalachian Trail work trip of the Smoky Mountains Hiking Club. Forty-four workers in eight groups covered 28 miles south of the Great Smoky Mountains National Park, from Deal's Gap to Cheoah Bald. . . . Every hiker's pet peeve: The "jazzed" map, a kinder-

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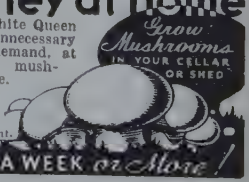

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rten product. . . . Negative, tactless instructions to tenderfeet guests of one club: Suitable dress does not mean silk hose and gh-heeled shoes, nor does it imply ice eam trousers unless you want them dirty. xpect to fall into the stream at least once." lore to the point is to offer specific *what wear* suggestions, rather than the *not* ind. . . . Occasionally the San Antonio Club Southern California) deviates from its *For-Men-Only* policy. Forthcoming events include a Boys' Hike and a Ladies' Hike. On he first every member is invited to bring lad under 16. The ladies will have to control their curiosity about the mystery trip prospect for them. . . . *Head Foremost* is ot related to setting-up exercises. It's a ountain populated by wild cats and bears. o wonder a grim "Be prepared for anything" reminder appeared in the schedule of he Natural Bridge A-T Club of Virginia. . . Faculty members and local professional riends belong to the Outing Club of Rutgers niversity. Activities center at a woods lodge lear Dover, N. J. Members alternate in acting as week-end hosts and hostesses. Organized hikes average one a month. . . . The *Washington Post* sponsors the Wanderbirds Hiking Club, in charge of Robert Shosteck, who must have plenty to do steering over 00 walkers every Sunday in the Capital's utskirts and amid Maryland and Virginia orderlands. . . . No relation to the Wanderbirds of Metropolitan New York. Leading worker here is William Hoeferlin, who performs a service to local hikers with his series f up-to-date local maps. . . . Not a Sunday fternoon hike missed since October, 1913, s the remarkable record of the Wanderlusters of Baltimore, Md. The club was rganized on the above-mentioned date.

Want some practical advice on adapting yourself to wet weather trips? Want the truth about four waterproof garments personally tested on the trail by Ernest A. Dench? Want the particulars of fifty clothing and equipment items, covering every possible wet weather hiking and camping need? It's all in the *Let It Rain* bulletin, published by the American Nature Association. Price 3 cents to members, and 10 cents to non-members.

Improving Meals in Camp

For a prolonged camping trip, without chance to replenish supplies, buy your bacon by the piece or the slab. It is not so likely to turn mouldy as the pre-sliced kind.

Changed living conditions require "roughage" in every camp meal. A heavy protein diet can be counteracted by the serving of stewed fruits, cabbage, onions, spinach and orange juice. Include one of these items on every menu.

A pinch of granulated sugar in a pot of camp stew gives it a distinctive flavor which particularly appeals to men.

When the sugar supply in camp is exhausted, jam and chopped dried fruits will prove palatable substitutes to use in cake dough and rice.

Take chocolate and dried fruits but leave jam and jelly behind when weight is a consideration on a camping trip. The jars are too heavy and fragile.

Every camping party should be provided with extra can openers. A careless member may lose the one entrusted to him. Imagine

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the predicament of being surrounded by plenty of food—and no way of getting at it!

The type of campfire adapted to various forms of cooking: *Frying,* a low, spready flame. *Toasting and Broiling,* red coals. *Boiling,* hot flame. *Roasting and Baking,* balanced, steady heat.

Foods slow to boil are best not taken to the higher mountains. The high altitude retards the boiling.

This Month's Gadget Crop

No. 1. The hiker or camper who accidentally steps into the brook above his high tops usually endures sodden shoes and stockings until the journey's end. The other day on the trail the Forum Editor witnessed an unusual use of vegetable parchment paper—the kind used for home cooking. A layer of this paper wedged between the soaked boots and a *dry* pair of stockings (which the owner had in reserve) enabled the resourceful hiker to finish the trip in comfort.

No. 2. The Potomac-Appalachian Trail Club has located an Eastern firm willing to manufacture transparent map cases to their specifications—11" x 8½". This size will house a U. S. topographic map if folded twice, and the map can be studied in stormy weather without damage. Case weighs one ounce and costs less than a dollar.

No. 3. A company specializing in first-aid supplies publishes a practical little magazine, free to club and school executives.

No. 4. Ye owner of sleeping bag or camp cot is promised freedom from pesky insects with a detached canopy now on the market. It folds up like an umbrella when not in use.

No. 5. A wood-burning stove, on which three lots of foods can be cooked separately, also comes with a stove pipe to chase away the smoke from the diners. Weighs thirty pounds and fits auto running board. Manufacturer mentions that this inexpensive stove was designed by a camper for campers.

No. 6. Two firms offer cruiser pack sacks with both shoulder straps and padded head straps. With heavy weights one can change over for temporary relief, or adapt support to the terrain. The head strap tote is suited to the crossing of swiftly flowing creeks or rock beds.

No. 7. Cloth insertions over the sole and heel may appeal to those women hikers and campers who go hoseless during the warm weather, yet who wish some measure of protection between the shoe and the foot. These cloth inserts come in silk, cotton, wool or lisle, with an elastic top-edge and ventilated non-slip heel.

No. 8. A perforated type of sport shirt, the texture of which resembles a super-dishrag, enables you to tan without burning. That, at any rate, is the maker's claim for this summer garment.

The Forum Editor will gladly, on request, enlighten readers as to any—or all—of the above sources of supply. Please enclose a stamped, addressed envelope.

Growth of Strictly Trail Clubs

The youngest and most vigorous type of club is that primarily engaged in trail construction and maintenance. The Potomac-Appalachian Trail Club was the pioneer in this field.

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Under the guidance of Myron H. Avery, the trail club movement spread southward, and now it is north bound. If the Appalachian Trail is to be the longest continuous footpath in the world, the price is conscientious maintenance.

Some of the present clubs have excessive mileage to look after, and are prepared to relinquish part of their holdings. The fewer miles in each club's custody, the more intensive the maintenance—Mr. Avery's goal. Active members of these trail clubs regard the manual labor as play, it being a change from their sedentary occupations. The reward is in accomplishment.

Openings exist for new trail clubs in various sectors between Maine and Georgia. Hikers interested in starting them in their respective localities will receive adequate cooperation from the Appalachian Trail Conference. Forum Editor will gladly place interested readers in direct touch with Mr. Avery.

The Outdoors Indoors

Although held in a Chicago hotel, the Prairie Club's annual banquet had a camp setting. The speaking was conducted from tables surrounding a small central stage, banked with pines. On the outskirts of these "woods" was a large campfire, so realistic that even the pots boiled! This source of magic, let us whisper, was dry ice. Each table in the room had its own tiny campfire—synthetic, of course.

The Prairie Club, apart from conducting an extensive program of local walks, owns a cottage colony in an attractive rural Illinois community. Its doings are recorded in a planographed paper, *Hazelhurst Highlights,* edited by Jack Johnson.

Another striking idea for an indoor affair is suggested by the recent *Gadgets Evening* held by the Camping Club of Great Britain and Ireland. Every member was asked to bring along his or her pet gadgets, even if a truck were needed first, and a master mechanic to later assemble them! As the C. C. announcement stated: "Many excellent ideas are in everyday use by members who, after a time, get used to them and take them for granted." American clubs please copy. And the Forum Editor will be glad to publish brief details of meritable gadgets, with full credit to the amateur inventors. Send 'em along, readers.

Bird Song Guide

No one, probably, has given longer or more careful study to bird songs than Aretas A. Saunders, and we find the refined results of his long research in *A Guide to Bird Songs.* Here we have a unique pocket handbook to take with us into the open and with which to identify some elusive bird by the music it pours forth from some high, obscure limb or from some thicket. Mr. Saunders provides, first, a chapter on how to identify birds by their songs, and then a key by which one can quickly place the song in one or another group. These essential prefatory chapters are followed by detailed discussion and diagrammatic descriptions of the individual songs of the birds themselves. This is a book for the library of every bird lover. It is published by D. Appleton-Century and sells for $2.50.

Yellowstone Park

Grand Canyon and Great Fall of the Yellowstone

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"WHAT is the greatest sight in Yellowstone," was asked of an Iowa educator, back from America's Wonderland. To which she replied: "I cannot say, for it is the grandest array of spectacles I ever beheld."

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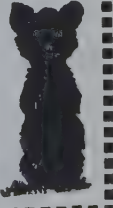

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Photographic Notes

BY SAMUEL BROWN

The photographic section of NATURE MAGAZINE is designed to be of service to its readers interested in photography, in particular Nature photography. All are invited to submit any problems or questions, which will be handled with dispatch. Any suggestions with respect to the conduct of this department will be welcomed by the editor.

May brings with it a multitude of Nature picture opportunities. Outstanding is the chance to get flower portraits. By using the proper methods, the camera becomes the invaluable friend of the garden enthusiast and the seeker of wild flowers.

Month by month the evolution from the bud to the flower in full bloom can be recorded and studied. Decorative arrangements of pattern and design make interesting studies, and pictures of wild flowers may be made for future identification.

Expensive equipment is unnecessary. Good flower pictures are made with the lens at a small opening, such as F. 11, or as small as F. 32. This brings the box and single lens cameras into really practical use. A portrait attachment, which permits working close to the subject, is desirable because a larger and more detailed picture is obtainable than could ordinarily be gotten. A color filter should also be used to correct the rendition of tone values. Where both the portrait attachment and filter are used the two may be fastened together face to face with adhesive tape. When working in this manner, the portrait attachment should be nearest the lens.

Flowers are best photographed during the early morning or late afternoon. If the subjects are in a soft, diffused light, better results are obtained than when the sun is directly overhead, casting hard shadows which never bring out the full beauty and delicacy of a blossom.

Usually a simple, artistically arranged cluster of two or three blooms, is more pleasing than a large number. Study the arrangement and photograph it from the point showing the most pleasing composition and lighting. Where wild flowers grow, distracting and prominent shrubbery will often be found. Such obstructions should be carefully removed or tied out of the range of the camera with a string.

I have seen many excellent pictures of flowers ruined by objects in the background. Special care given to this point is extremely important. Objects in the background should either be removed or hidden. With the equipment which I carry on wild flower picture hunts is a piece of neutral gray and a piece of black cloth. Before I make an exposure I rig up a stand of twigs and branches and spread the contrasting background over it. In the case of white or light flowers this is the black cloth, and where dark blossoms are to be photographed I use the light material. Care must be taken that the cloth is fully stretched as any wrinkles would show plainly.

The point of view from which the picture is taken has much to do with the success or failure of the attempt. Try to view the flowers from every angle; above, below and every side of it. If the flower grows close to the ground it is usually a good idea to hold the camera low. It is rarely good policy to look down upon the flowers.

Wherever possible, panchromatic film should be used. This film is sensitive to red, which appears so often in flowers. The fine rendition of colors, by these emulsions has broadened this field of activity for those who wish to enjoy this fascinating field of photography.

Where orthochromatic film is used, a yellow filter, such as the K 2, may best be

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utilized. This filter will give the best possible correction obtainable with Verichrome, Plenachrome and N. C. films. If complete, perfect correction is required, it may be obtained with panchromatic film, supplemented by the X 1 filter, which is pale green in color and cuts out a small amount of red light, in addition to the blue.

In taking close up pictures of flowers it is best to stop the lens down as far as the light permits and give a correspondingly long exposure. On a hazy spring day at F. 22 an exposure of $\frac{1}{10}$ of a second should be given. Early in the morning or late in the afternoon the exposure, using the same stop, should be increased to $\frac{1}{2}$ second. On extremely dull days one full second can be allowed. On windy days, when the chances of movement are possible, a larger opening should be used and a shorter exposure given. When larger sections or complete gardens

TAKEN IN THE EARLY MORNING WITH ONE SECOND EXPOSURE AT F. 22, ON VERICHROME FILM WITH A K 1 FILTER

are photographed, an exposure of $\frac{1}{25}$ of a second is generally advised.

Much pleasure can be derived by making enlargements of flowers and coloring them with transparent paints. I have a number of them framed and hung on the walls of my den. They are attractive and brighten the room remarkably.

Plates and films can be developed under practically the same conditions as prints by employing desensitizer. Desensitizer lessens the sensitiveness of the emulsion to light without destroying the latent image created by exposure. After immersion, for two minutes, in the desensitizing solution, development may be carried out in orange or indirect white light which is safe for bromide papers.

Filter Factors

THE following table shows the number of times the exposure, *without* a filter, must be multiplied to give correct exposure when a filter *is* used.

Filter	*Verichrome*	*Panatomic*	*S.S. Pan*
K 1	2½	1½	1½
K 2	4½	2	2
X 1	—	4	3½

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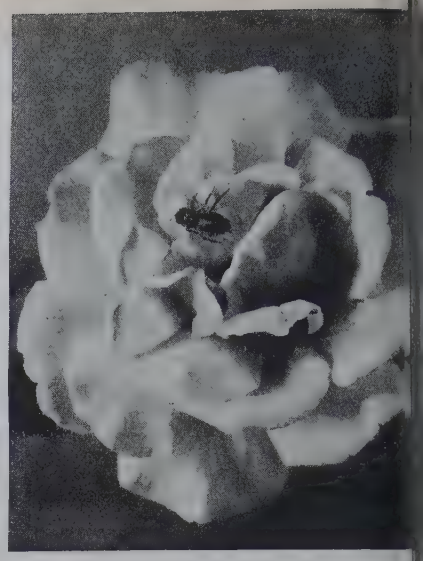

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"CARBON COKE"

(Continued from page 228)

his grandmother had told him he could go, and his apparent pessimism over the situation.

While Carbon Coke was an outcast from the family living room and the family dinner table, unloved and unlovely, nevertheless there was something in Coke's character that commanded respect. One felt that under happier circumstances Carbon Coke might have been a leader of crows, for even as it was he had made the best of a very bad bargain. Born to soar in the unhampering blue; to teeter on the tips of pine trees; to flock in jolly gregariousness with a band of companions; Coke had finally adjusted himself to the life of a mere hen. To him the sky was an unexplored mystery that held nothing but menace, whether it was a jeering caw dropped down upon his startled ear, or the shadow of a hawk swinging above him. He came in contact with none of Nature's children except sick grasshoppers and the cross chipmunk whose woodpile he had appropriated, and whose rare conversations with him were not carried on in any spirit of comradery. A good deal of the time Coke must have been lonely. That he was unhappy, later events proved. This, then, is the faithful portrait of Carbon Coke as he spent the summer under the baleful influence of being tolerated, instead of loved, by his landlady.

And now comes the happy sequel which gives evidence that our interpretation of Coke's feelings was not fanciful, but rather a true spiritual at-oneness with all life; for when he had returned to his old home in New Jersey, surrounded by a sympathetic atmosphere and free to roam as he pleased with no reminder that he was, after all, nothing but a dirty crow, there came over Carbon Coke an extraordinary change. His ugly temper and his unsociability dropped from him. He followed his master and mistress about as lovingly as a puppy, with no refrigerator motif in his voice that had now become a sort of happy chuckle; and he has survived the nervous shock of an encounter with a cat that reduced his tail feathers still further, and a rescue from the very jaws of a dog without losing his new equanimity. Coke's grandmother has been informed that his unlovely conduct of the summer was only because "he knew he wasn't liked and that made him hard and bitter". Now Coke is "sweet". Now Coke is "meek". Now he "tries all day to make himself agreeable and attractive"; hourly growing in grace and charm. So it would seem that this little crow soul could blossom only in the sunshine of Love—Love, that is as real a power as gravity or gasoline.

One looks with skepticism on the words of a lover—even if it is only the lover of a crow—so it was not until Coke's grandmother had seen him again with her own judicial eyes that she believed the half of his

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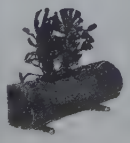

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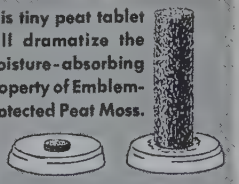

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conversion. But she knows now, on first-hand evidence, that it is true. When she was re-introduced to Coke last October, she would not have known him except for the rear view which continued in outline, stubby and ragged. The front half of Coke—that is to say the part of his feathers that he himself is responsible for—is preened to such blue-black glossiness as to suggest that he is a taffeta-silk crow; for he bathes as many times a day as an old Roman dandy, first carefully taking out the dead leaves which blow into the bird-bath. And all this is in keeping with the change in his emotional nature which has mellowed to such a delicate sensuousness that he will stand by the hour and have his back stroked, bemused and blissful, his eyelids flickering dreamily over his eyes in slow and milky winks. Nor is this the only change. His intellect seems to have waked up as well.

Since his narrow escape from the cat and dog, when the family are not in the garden with him, Coke is kept in a roomy wire enclosure. To hold his drinking water he has a medium sized wooden chopping bowl. It is almost impossible to keep this filled, for Coke perching on its rim, begins to rock it until finally all the water is sloshed out on the side opposite him. When this happens he runs over and stands with his head cocked, listening, listening, for what? For the microscopic rustle of an earth-worm, which he draws out—a horrid pinkish unwinding—from the wet soil. And this is not all, for on dry days when he has used up his drinking water and the family are too busy to wait on him, Coke, the incredible crow, drags his bowl away and begins to hunt worms in the damp circle of earth where it has stood!

The use of speculative imagination is not encouraged in scientific quarters, yet it is through this faculty that a Galileo glimpsed the earth swinging by its invisible tether to the sun, and an Einstein dared to split open our tight little theories of time and space. And so it is through the use of speculative imagination that we must look at Carbon Coke the crow; for a crow is more mysterious than a planet. A planet travels in its foreordained orbit. A crow ordains its own orbit. And do we but visualize all life as sparks struck from the same great fire, we see that despite intellectual abysses that separate us, on planes of primitive passion we are brothers, whether it be a tick or a tiger, a mouse of a Mussolini. Looked at, then, in this comprehensive manner, we may find in the behavior of Carbon Coke more—much more—than the mere story of a grounded and tailless crow.

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People with a pair of good legs and an interest in geology will be interested in a splendidly planned hiking trip to be led by Dr. and Mrs. Carroll Lane Fenton in Glacier Park this July. Dr. Fenton has written a number of fascinating geological articles for Nature Magazine and is so intimately acquainted with the rocks of Glacier that the mountains almost nod to him as he passes. Mrs. Fenton shares his interest and is, herself, no mean geologist. The trip has been planned to cover the period from July 9 to July 22, but may be taken in part or in whole. Full details may be obtained from Dr. Fenton, 915 Columbus Street, West Liberty, Iowa.

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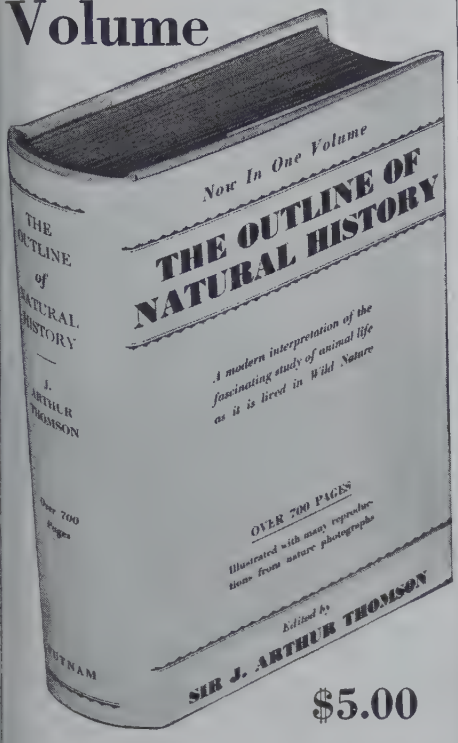
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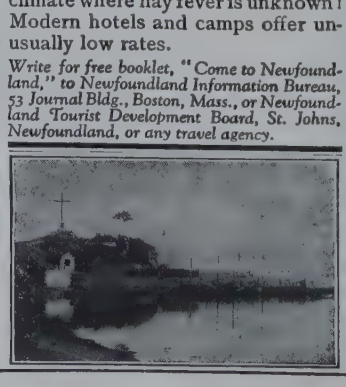

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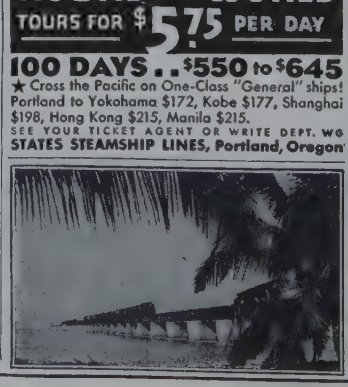

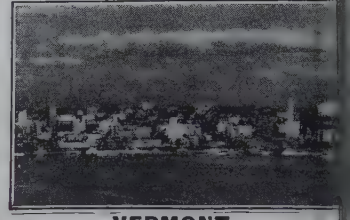

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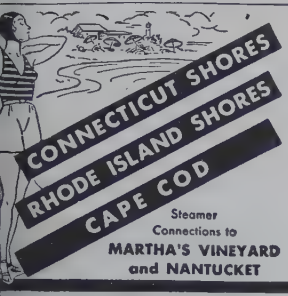

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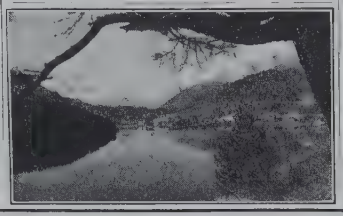


Brevities

Important cooperative developments are expected now that the Sierra Club has joined the Western Federation of Outdoor Clubs. Sierra Club prestige is prized even more than its numerical strength, 2200 members. . . . Puzzling is the order of an Eastern club to "take two meals along; you can cook one of them." What's going to happen to the other? . . . A useful pamphlet is *Maine Camp Sites,* free from Maine Forest Service, Augusta, Me. State law restricts non-resident camper to public sites, unless he has a registered guide in tow. There are, of course, the comfortable sporting camps—wilderness hotels, whose advantages are advertised in the 1935 issue of *In the Maine Woods.* Bangor and Aroostook Railroad Co., Bangor, Me., charges only the postage—ten cents—for a copy. This profusely illustrated manual contains four informative articles, written by hikers and trail makers, on Maine mountaineering and trail achievements. . . . Belated recognition here of the Blackhawk Trails Club, which has 91 members, and is anxious to develop inter-club correspondence and exchanges. President is Earle C. Ainsworth, 2139 Seventh St., Rockford, Ill. *Talk O' the Trails,* bulletin capably edited by Gladys Ainsworth, was recently enlarged. . . . Natural Bridge A-T Club is rendering financial assistance to a mountain family in dire straits. . . . An endless serial—Saturday afternoon walks of the Prairie Club, Chicago. 1100th of the series took place April 13 under leadership of three charter members. . . . Sky Line Trail Hikers of the Canadian Rockies will visit an area in Banff back country—Egypt Lakes—formerly inaccessible by trail. Canadian National Parks department has agreed to make such a path in time for the party's visit, August 2-5. Relatively few have visited this Alpine terrain to date. . . . Are the axe men of one Appalachian Trail club of the musical comedy type—bursting into song before tackling each windfall, and doing a jig on its completion? Such a surmise is based on the news item that "since our last trip there has been a hurricane, which will mean lots of fun for the axe men." . . . Intercollegiate Outing Club Association held its fourth annual conference, May 11-13, at Breadloaf, Vt. Activities of affiliated clubs are fully reported in quarterly bulletin, $1.00 yearly to non-members. Secretary is Leon E. Magoon, Durham, N. H. . . . Colorado Mountain Club's 23rd annual summer outing will be a reconnaissance of the Gore range. This Colorado primitive area offers first ascents of unnamed mountains, with elevations averaging 13,000 feet. Base camp will be established. Gore range map and description appears in March *Trail and Timberline,* 15 cents, from the C. M. C. at Chamber of Commerce Building, Denver. . . . We anticipate a rush of hikers to Reading, Pa., after they learn of a non-dues paying club there. All administration expenses of the Community Hiking Club, 425 members, are met from the profits of St. Patrick's Day and Hallowe'en dances. . . . A Scout Council of twelve leaders cares for the monthly Sunday afternoon hikes of the Walther League Hiking Club, Chicago. Each leader conducts one hike a year. The 60 members receive *The Milepost,* a mimeographed monthly paper. Chief Scout is Elmer F. Glabe. . . . Georgia Appalachian Trail Club is assisting Decatur Park Committee and Camp Fire Girls develop a trails system in local watershed tract. . . . Forum Editor lives and learns. He thought map buyers were chiefly those about to explore the ground. It appears they are also in demand by map readers and collectors, who are acquiring copies of the Hikers Region maps (Southern New York and Northern New Jersey), published by the Wanderbirds. A list is available (enclose stamp) from William Hoeferlin, 556 Fairview St., Brooklyn, N. Y. . . . Margaret Hey is busy compiling camp menus in preparation for summer trips of the Milwaukee Go-Hiking Club. Line to kitchen forms on the right! . . . And we might add that care of the "inner man" accounts for the efficient trail maintenance of the Maryland A-T Club. Its feminine-operated commissary produces meals that *are* meals. All "fan" mail to Hagerstown, Md.!

Hiking and Camping Forum

Conducted by
Ernest A. Dench

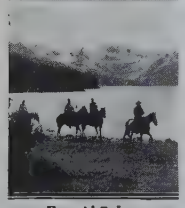
Hiking and camping inquiries will be answered by mail if a stamped addressed envelope is enclosed. Address the Forum editor.

"Who deliberately goes out hiking in the rain?" remarked one young woman when she heard of our "Let It Rain" bulletin.

The minority does so, but the majority are unexpectedly caught in a shower or storm miles away from any habitation.

This bulletin's purpose is to reveal how the hiker and camper can travel in comfort when the Weather Man misbehaves himself. It's largely a matter of the proper clothing and equipment. Price—a 3 cent stamp to members; 10 cents to non-members.

See MAJESTIC JASPER in Canada's Rockies



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The Robin Slaughter

James Taylor Adams is postmaster at Big Laurel, Virginia. He is also local correspondent of newspapers. In the course of this last activity he sent out a story about the hideous slaughter of robins that were congregating in numbers in the vicinity. This was reported in our March issue. The robin is a protected songbird and its killing is illegal, so this report brought the authorities into the picture and half of the male population of the community were arrested, haled into court, found guilty and fined. In fact, they pleaded guilty. The aftermath of the affair, however, is that they are now petitioning to have the Big Laurel postoffice discontinued and Mr. Adams ousted. Last December they petitioned that the postoffice be retained and Mr. Adams continue as postmaster. Mr. Adams has done a real service to bird life. Whether he performed it inadvertently by sending out what he thought was a good news item, or whether he was disgusted at the slaughter, we do not know, but we owe him a debt of gratitude whether the so-called men of Big Laurel can take their punishment or not.

Bluebird Houses

William H. Hoffstot has a major hobby and that is homes for bluebirds. He is a lover of birds generally but with a particular enthusiasm for those avian bits of sky. Mr. Hoffstot carries his hobby into practical terms by offering, to anyone who will send a stamped return envelope, simple plans for making a bluebird house. This arises out of nothing save a sincere affection for birds and Mr. Hoffstot may be reached at 14 East 55th Street, Kansas City, Missouri.

Training Counselors

The eighth annual training course of camp counselors held by the Children's Welfare Federation will be given at Camp Northover, Bound Brook, New Jersey, June 13 to 16. Full information may be obtained from Dr. M. Alice Asserson, Children's Welfare Federation, 386 Fourth Avenue, New York City.

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What, More Gadgets? Yes

No. 1. A camper friend highly recommends a pellet preparation for use in doubtful drinking water. It does not flavor the water. Requires 30 minutes to purify.

No. 2. A sturdy play tent for children, specially treated to endure rain and sun. It is of the "Umbrella" type, and comes in two sizes.

No. 3. A Southern plantation, doing business by mail, puts up two-pound broilers in vacuum cans. A camping convenience is that the chicken is already cut up into twelve pieces, each seasoned with white meal and wrapped in corn husk. Five minutes in the pan, with a few pieces of bacon added, over the open fire and it is ready.

No. 4. A well-known American mill has accepted the U. S. A. sales agency for a world-famous outdoor blanket made in Canada. Department stores in leading cities will retail this frontiersmen's favorite bed covering.

No. 5. Highly-concentrated lemon and lime drinks in powdered form offer a change in camp beverages. Fully comply with all pure food laws.

No. 6. Snag-proof, waterproof processed breeches of an excellent gabardine for summer wear. Ample scope for ventilation. Each pair made to measure at a moderate price.

No. 7. A snake bite outfit for extracting the venom by suction. Experts claim this is the logical course *before* the anti-venin serum is applied. The medical firm producing this compact, inexpensive outfit will send free folders on snakes and snake bites.

All the above seven sources of supply are given on a mimeographed circular, which the Forum Editor will send if a stamped, addressed envelope is enclosed.

Youth Hostels Are Here

The Youth Hostel movement has spread to this country. Hostel No. 1, now open, occupies the basement of a pretentious château at East Northfield, Mass. No. 2 is Cowles Lodge, South Hadley, Mass., where Mount Holyoke College has a student residence, leased for the summer to the American Youth Hostel Association.

The first complete chain will probably be in operation by midsummer. It will extend from East Northfield to the Presidential Range of New Hampshire, and over to Vermont, thence down the Long Trail and back to East Northfield. Several "stems" are contemplated—one from Boston; the other from New Haven.

We regret that a region already provided with hut and cabin systems was chosen for this praiseworthy experiment. There are other sections of the country which literally cry out loud for inexpensive overnight accommodations adjacent to trails. The A. Y. H. A. would perform a valued service by first tackling such areas.

Based on the European model, membership is primarily for youth, the dues being one dollar yearly. Overnight dormitory accommodations, which include cooking facilities and a common room, are 25 cents a night.

Caretakers of European hostels are known as wardens. Here the custodian is labeled as either the "House Father" or "House Mother"—a forced sentimental touch which may

(Continued on page 339)

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The American Telephone and Telegraph Company has only one class of stock and that stock is not watered.

It has 675,000 stockholders living in every corner of the land. Their average holding is twenty-eight shares. No individual or organization owns as much as one per cent of the stock. There are no secret reserves or hidden assets.

This structure is not of recent origin, but dates back many years to the early days of the telephone. It has lived on because it is right and in the best interest of the public. It has been fundamental in making the Bell System a distinctive American business.

Research for the Bell System is carried on by Bell Laboratories. Manufacturing, purchasing, distributing by Western Electric. Both help in giving the country good, economical telephone service.

BELL TELEPHONE SYSTEM

In the Month of June

•

The ascendancy of life that begins with the first awakening in spring, encouraged by the rains of April and the inescapable influence of the spirit of growth in May, seems in June to culminate in days of ecstasy that can not be surpassed. "Every clod feels a stir of might", and the poet—sensing the accomplished loveliness of Nature that can not be spoken—throws out the never-answered question:

And what is so rare as a day in June?

Rare days of June—thirty of them—invite the seeker to spend every available hour in the places where the living things of the out-of-doors are at hand to be seen and known. Even the worldly-minded inmate of the city—the modern cliff-dweller, who with stupendous seriousness tends to his ledgers, his correspondence, and his customers, and seeks his diversion in theatres and concert halls or with other crowds at games—will feel in June a vagrant urge to enjoy the flowers, the birds, and the breezes. He may no more than speed through the country watching the streaming haze of fast-passing roadsides, but if he stops—and looks and listens—he will pause longer to marvel at the wealth of life. In this attitude, in the open, it may seem not at all credulous to believe:

'Tis as easy now for the heart to be true
As for grass to be green or skies to be blue.

Not only for man, though, the favorable warmth of June also brings to the fields the teeming populations of insects. The hum of bees from flower to flower comes pleasantly to one whose ears are unencumbered by the roar of automobiles or the drone of airplanes, and perhaps reminds him of Emerson's "burly, dozing humblebee"

Seeing only what is fair,
Sipping only what is sweet.

The dragon-flies, half-dreaded in childhood, are iridescent in the sunshine as they hover over the water or fly rapidly away with so little effort that the perspective seems to change and they resemble distant air-liners. In the evening the hawk moth, called by Burroughs that curious parody on the hummingbird, speeds from flower to flower, and at night the lunas and other conspicuous moths testify to the fascination of bright lights.

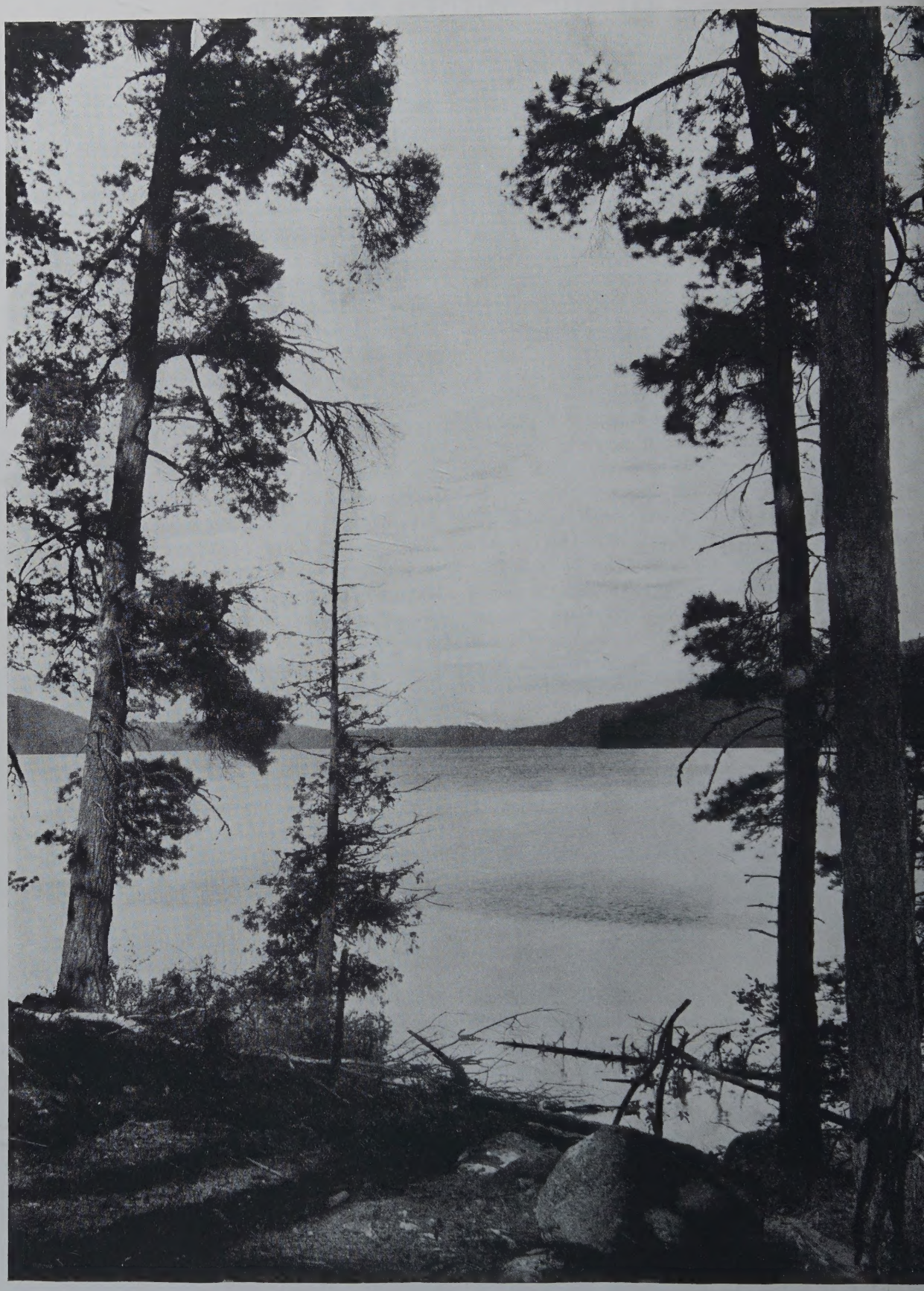
It is the month of the wild rose, pink, delicate in fragrance, and so fragile in its beauty that it can not keep its petals though shaken only by the careful hand that easily gathers the garden varieties into bouquets. In dry, sandy soil of field or half-open woods, the blue panicles of the wild lupine lift themselves above the plants' radiating leaflets. This member of the pea family, of boreal origin, colors the earth with its blue clumps at frequent intervals, and the roamer, like Thoreau, is excited by "such a profusion of the heavenly, the Elysian color, as if these were the Elysian fields." But other fields display other colors against the grass that in June is so easily green. Tall buttercups toss their golden chalices in the breezes and tempt the touch of fingers by their satiny smoothness. Yellow dandelions, too, are abundant, and mustard, weed though it is, adds its great patches to the month's beauty that is yellow. The black-eyed susan, the yellow daisy, displays a deeper, darker shade that partakes of orange and brown, while its imported relative, the common white daisy, decorates its yellow center with a fringe of white ray flowers "in just the daisy fashion." So common it is, so apparently characteristic of our landscapes, that it is as hard to believe it of European origin as it is to realize that we ourselves are not "natives" of these fields that seem so beautiful and so appropriate to our lives. Another flower of the Old World, the orange hawkweed, waves its devil's paintbrush in the fields and along roadsides, and its contribution of red to the month's color scheme is matched by the sheep laurel, or lambkill, that displays its crimson or purplish red flowers on sandy, moist hillsides or in swamps.

In the woods the mountain laurel shrubs that year-long hold their evergreen shapely leaves are now heavy with terminal clusters of pink or white flowers—each one a marvel that tempts the visitor to spend an hour touching the bended anthers and watching them straighten out with the elasticity so nicely designed to spray the pollen at the appointed time. The trees in the woods are in full leaf, and already the red maple has matured its fruit and is sending its winged keys to open new lives.

And again the birds celebrate with song the glory of life and the beauty of love in June:

He sings to the wide world, and she to her nest,—
In the nice ear of Nature which song is the best?

Robins and bluebirds and many other home birds are busy gathering food not only for themselves but for the young birds, too. The month's population of insects makes provision for them, and the birds make the difference between abundance and overabundance. The yellow-billed cuckoo inconspicuously spends hours in the trees feeding on tent caterpillars and uttering those strange notes that are reputed to foretell rain. While this "rain-crow" is working in the tree tops, the wood thrush is busy near the ground floor and toward evening adds its melodious notes to the music of the day. And goldfinches and cedar waxwings, not yet nesting, spend the month flying about in flocks—the goldfinches in their undulant flight giving voice to the joyous rapture of the month and the waxwings in quiet flocks seeming in their refined ways to express one's deep contentment with Nature in June.



IN THE RAINY LAKE SECTION OF QUETICO
PROVINCIAL PARK, ONTARIO, CANADA